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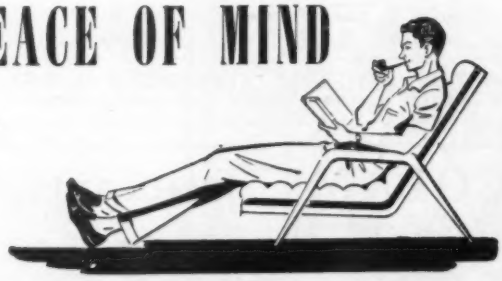

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CONTENTS

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ORIGINAL ARTICLES

A Concept of Diabetes
W. P. U. JACKSON, M.B.C.P. 625
Metabolic Response to Total Adrenalectomy and Hypophysectomy
A. STUART MASON, M.B.C.P.. 632
Myasthenia Gravis
F. R. FERGUSON, F.R.C.P.
E. C. HUTCHINSON, M.R.C.P.
L. A. LIVERSEDGE, M.R.C.P.. 636
The Gastric Mucosa in Iron-deficiency Anæmia
W. M. B. DAVIDSON, M.B.
J. L. MARKSON, M.R.C.P.E... 639
The Effect of Repeated Tuberculin Testing on Post-vaccination Allergy
KNUT MAGNUS
LYDIA EDWARDS, M.D..... 643
On Expelling Tapeworms with Mepacrine
D. R. SEATON, M.R.C.P..... 644
Acquired Renal Disease Simulating Diabetes Insipidus
H. G. MORGAN, M.R.C.P.E.
A. P. M. FORREST, F.R.C.S.
K. G. LOWE, F.R.C.P.E..... 645
Palliative Intubation in Carcinoma of Œsophagus
ALEXANDER COYAS, M.B.... 647
Dual Cause of Rapid Death
W. D. FOSTER, M.B..... 649

NEW INVENTIONS

A Laryngoscope for Bronchography
BARBARA SALISBURY, M.B... 650
A Breath Shield for Ophthalmoscopy
M. SARWAR, M.B..... 650

SPECIAL ARTICLES

Psychosomatic Problems in Postural Re-education
WILFRED BARLOW, B.M..... 659
The Health Service in 1954..... 664

REVIEWS

Notices of Books..... 651

PUBLIC HEALTH

Poliomyelitis..... 672

LEADING ARTICLES

CARCINOMA OF THE ŒSOPHAGUS. 653
SEXING NUCLEI..... 654

ANNOTATIONS

Pitfalls in the Care of the Cardiac Patient 656
Investigations on the Prostate.. 656
Excretion of Chorionic Gonadotrophin..... 657
Pseudomembranous Enterocolitis 657
Renal Complications of Battle Injuries 658
Comics..... 658

CONFERENCES AND CONGRESSES

International Congress of Neuropathology 667
World Congress of Anesthesiologists 669
International Congress of Criminology 670
World Federation for Mental Health 671
European League for Mental Hygiene..... 671

LETTERS TO THE EDITOR

Professional Responsibility (Sir Russell Brain, F.R.C.P.)..... 673
Registrars (Mr. W. Sewell, F.R.C.S.) 673
Slipped Femoral Epiphysis (Mr. F. C. Durbin, F.R.C.S.)..... 674
Morphine and Propantheline in Intravenous Cholecystography (Dr. M. W. P. Ward)..... 674
The Death Penalty (Mr. Conrad Ascher, B.SC.; Mr. A. M. Woolman, PH.D.)..... 674
Intermittent Positive-pressure Respiration (Dr. W. Ritchie Russell, Dr. A. Crampton Smith, Dr. J. M. K. Spalding) 675
Sequels to Anæsthesia (Prof. G. M. Wyant, F.F.A.R.C.S.; Dr. P. F. M. MacDonagh).... 675
Tiemann's Catheter for Bladder Drainage (Mr. John Swinney, F.R.C.S.)..... 675
Toxic Psychosis with Neurological Features Due to Methylpentynol (Dr. M. M. Glatt; Dr. Geoffrey Hirst)..... 675
Thrombophlebitis After Infusions (Dr. M. H. F. Coigley; Dr. Leonard Ley)..... 676
Polished Floors (Dr. W. E. Snell) 676
Ilio-inguinal Block Dissection (Dr. Stanley Rivlin)..... 676
Tracheotomy in Acute Respiratory Embarrassment (Mr. Alexander Duff, F.R.C.S.E.).... 676
Tonsillectomy Without Tears (Mr. H. V. Forster, F.R.C.S.)..... 676
Resistant Tubercle Bacilli (Dr. D. A. Mitchison, Dr. J. B. Selkon) 677
Spectral Phonocardiography (Dr. V. A. McKusick)..... 677

IN ENGLAND NOW

A Running Commentary by Peripatetic Correspondents... 672

MEDICINE AND THE LAW

Dangerous Drugs..... 678

OBITUARY

William Ernest Boyd..... 678
Dr. Howard Gray..... 678

NOTES AND NEWS

Memorial to James Parkinson... 679
Cancer in Birmingham..... 679
Food Consumption in 1953..... 679
The Suicidal Patient..... 679
Radiology Exhibition..... 680
Arrow Projection Torch..... 680
University of Birmingham..... 680
West End Hospital for Neurology and Neurosurgery..... 680
Royal Institute of Public Health and Hygiene..... 680
Middlesex Hospital, London.... 680
Ophthalmological Society of the United Kingdom..... 680
Association of Clinical Pathologists 680
Aids for the Disabled..... 680
Institute of Diseases of the Chest, London 680
Diary of the Week..... 678
Appointments..... 678
Births, Marriages, and Deaths... 680

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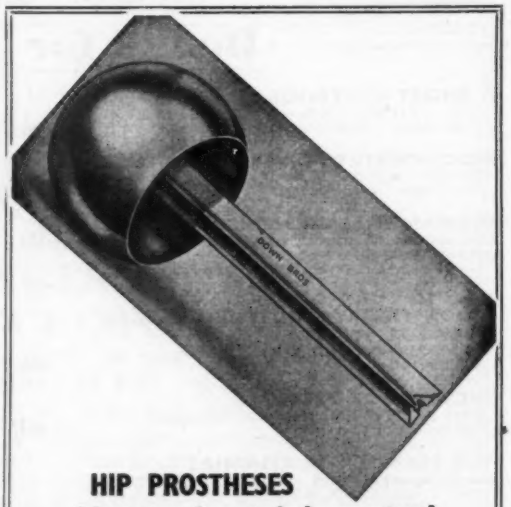

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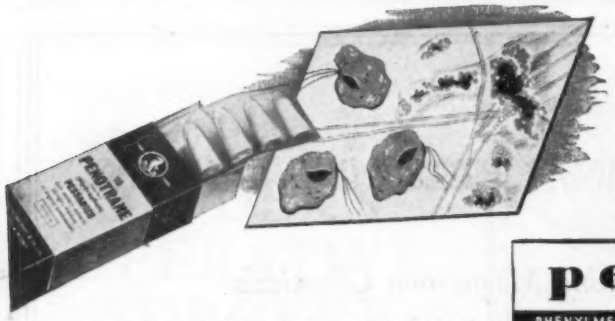

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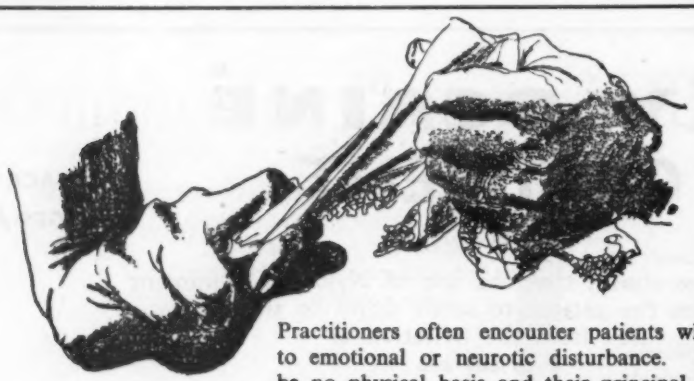

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Phenobarbitone B.P. ¼ *gr.: Aneurine Hydrochloride* 1.5 *mg.: Riboflavin* 1.0 *mg.: Pyridoxine Hydrochloride* 0.17 *mg.: Nicotinamide B.P.* 5.0 *mg.: Alcohol* 15%.

'Beplete'
Trade Mark

John Wyth & Brother Limited, Clifton House, Euston Road, London, N.W.1. Wyeth

CONTROLLED TENSION

- A safe hypotensive of precise therapeutic value.
- Easily adjusted oral dosage.
- Relieves fatigue and tenseness, allays anxiety states, promotes feeling of well-being.
- No necessity for frequent blood pressure determination.
- No extreme sedative or unfavourable hypotensive action.
- No serious toxic reactions.
- Developed and clinically tested on millions of cases over a period of 21 years.
- Prescribed and sold all over the world.

Serpina

The World's Pioneer Rauwolfia Hypotensive & Cerebral Sedative

Standardised 4 mg. Total Alkaloids of Rauwolfia serpentina (Benth) per tablet.

THE HIMALAYA DRUG CO. 251, Hornby Road, Bombay-1.

Sole Distributors in U.K.: The Hillside Pharmaceuticals, 839, High Road, North Finchley LONDON, N.12

A Superior Buffered Analgesic

'ALASIL' TABLETS—the improved form of salicylate medication—provide the efficient analgesia expected from their content of aspirin. Their superior acceptability derives from their content of a reliable buffer which minimizes the tendency to gastric irritation sometimes caused by the use of aspirin alone.

Advantages 'Alasil' is an advanced sedative and antipyretic; it does not tend to induce gastric irritation; because of its high tolerability, it may be used for long-term administration even to those with sensitive stomachs, and to children.

Composition 'Alasil' Tablets contain the recognized antacid corrective, 'Alocol' (Colloidal Aluminium Hydroxide), which permits their sedative principle, acetylsalicylic acid, to exert its action with minimal risk of side-effects.

Indications Symptomatic pain generally; rheumatism, fibrositis, lumbago, headache, dysmenorrhoea; dental pain.

Packs & Prices TO PHARMACISTS (*P.T. exempt for dispensing*) Standard size: 1000 in 250 bottles, 30/8, 'Juvenile' size: 375, 6/6; 750, 11/3; 1500, 21/6. Available on N.H.S. scripts

ALASIL JUVENILE TABLETS

Alasil 'Juvenile' Tablets specially sized for children, and neither coloured nor flavoured, are packed in tubes bearing dosage-for-age instructions.

Alasil

M.391

SAMPLE & LITERATURE ON REQUEST TO A. WANDER LTD., 42 UPPER GROSVENOR ST., LONDON W.1.

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by VISTER VISMARA TERAPEUTICI

Casatenovo (Como) - Italy

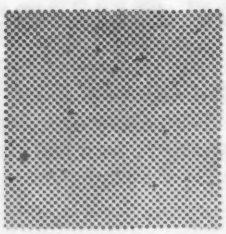
Original manufacture of natural hormones synthetic hormones, chemotherapeutic substances

Careful standardisation of active ingredients during manufacture, control and investigations in its Research Laboratories

Vister presents

ANTEMOVIS

an entirely new preparation for the control of bleeding in medical and surgical conditions



Double sulphate of 5 - hydroxytryptamine and creatinine 5 mg. in 2 c.c. ampoules - Box of 5.

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LIL-LETS

the new vaginal tampon without applicator

A tampon which has been successfully marketed on the Continent during the last five years has now become widely accepted in this country under the name LIL-LETS.

Following extensive clinical trials, LIL-LETS have won the support of leading gynæcological opinion. Samples will be sent to medical practitioners on request.

LIL-LETS have these main advantages:

LIL-LETS need no applicator. By inserting the tampon with the fingers, the risk of bruising is eliminated.

LIL-LETS assist personal hygiene. At 1/6 for 10 they are so much cheaper than other leading tampons that women will be encouraged to change them often. They are easily carried about and easily disposed of.

LIL-LETS are highly absorbent. They absorb almost ten times their own weight in moisture and swell sideways, not lengthways. They are, therefore, really safe.

LIL-LETS are individually wrapped. Each tampon is sealed in a transparent cover. There is no risk of soiling or infection when it is carried loose.

LIL-LETS
o.b.

S&N SMITH & NEPHEW LTD · WELWYN GARDEN CITY · HERTS

Something Lacking . . .

The practitioner frequently encounters circumstances when that "something" is likely to be the vitamin B-complex. Administration of antibiotics, acute infections, surgery of the alimentary tract are particularly associated with impaired absorption or utilisation of these essential factors, with resultant insufficiency.

Initial intensive therapy (oral or parenteral) is provided by Becovite, with subsequent maintenance by Befortiss.

For intensive therapy **BECOVITE B Complex**
Tablets, 2 ml. Ampoules (Boxes of 3 pairs) Elixir (6 fl. oz.)

For maintenance therapy **BEFORTISS B Complex**
Tablets, 1 ml. Ampoules (Boxes of 5) Elixir (6 fl. oz.)

FULL DETAILS OF PACKS AND PRICES ON REQUEST. ALL PRESCRIBABLE ON THE N.H.S.

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PARENTROVITE *for Neuroses & Psychoses.*

An injectable preparation of B vitamins and vitamin C in high concentration.

In Boxes of 3 pairs of ampoules. Hospital Packs also available.

OMNIVITE FORTE *for Oral use.*

Tablets containing all the vitamins needed to restore deranged metabolic processes.

In packs of 100 tablets.

Who's next ?

Another rheumatic sufferer?

It is fortunate that an effective adjuvant in the treatment of this disease is available, bringing the patient prompt and effective relief from pain.

The value of salicylate in rheumatic disorders has long been recognised, but until recently its use was restricted by the toxic effects accompanying the necessarily high dosage.

In Berex, the combination of acetylsalicylic acid and calcium succinate enables toleration of massive aspirin dosage without lowering the prothrombin level, with encouragement of tissue respiration, and with less gastric disturbance.

SUMMARY OF STUDY ON SUCCINATE-SALICYLATE THERAPY*

A succinate-salicylate combination was found superior to acetylsalicylic acid in rheumatic states both on grounds of therapeutic efficacy and lower toxicity. Adequate amounts of the former could be administered with more lasting effect and with fewer and milder side effects. Furthermore, succinate-salicylate affects the disease process itself, as well as relieving painful symptoms and does not abnormally increase prothrombin time even after prolonged dosage.

* *Delaware State Medical Journal* (1954) **26**, 22.

BEREX
Trade Mark

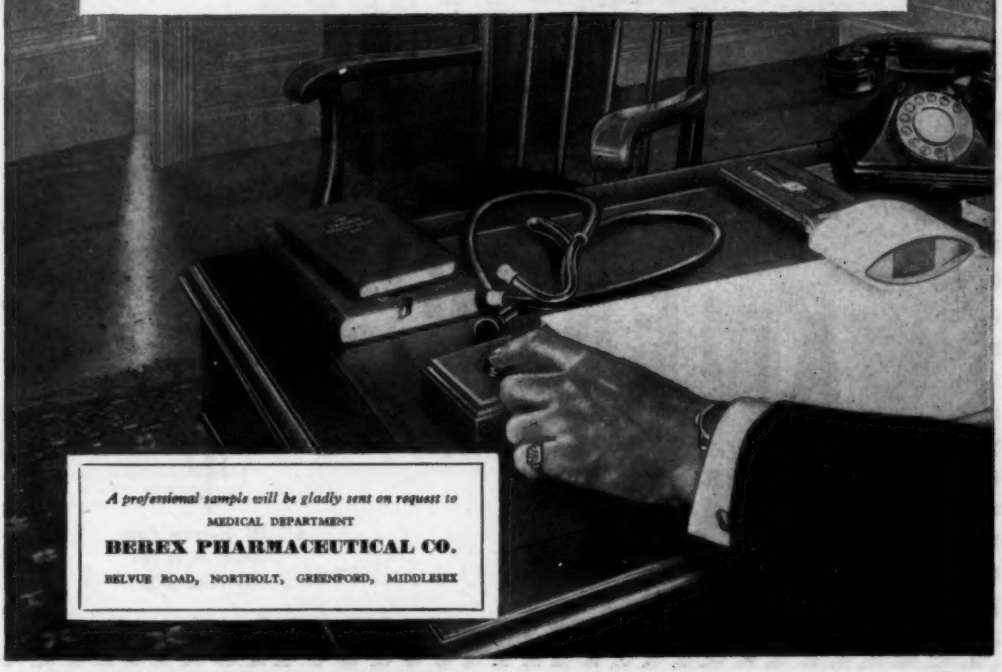
SUCCINATE-SALICYLATE THERAPY

For the relief of the painful symptoms associated with all rheumatic disorders

FORMULA: *Calcium Succinate 2.8gr.*
Acetylsalicylic Acid 3.7 gr.

IN TABLET FORM: *Basic N.H.S. Price 4/6½d. —100 tablets; 23/4d.—600 tablets.*

BEREX *has never been advertised to the public*



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MEDICAL DEPARTMENT
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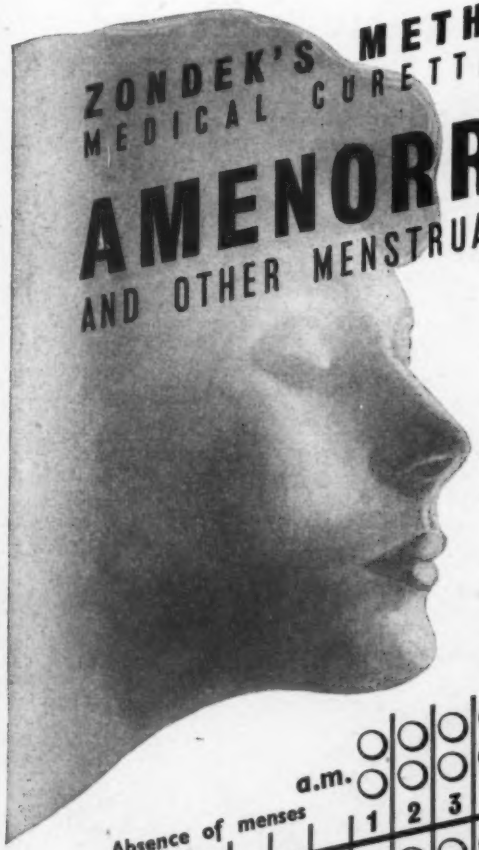
BELVUE ROAD, NORTHOLT, GREENFORD, MIDDLESEX

ZONDEK'S METHOD
MEDICAL CURETTAGE

AMENORRHOEA
AND OTHER MENSTRUAL DISORDERS



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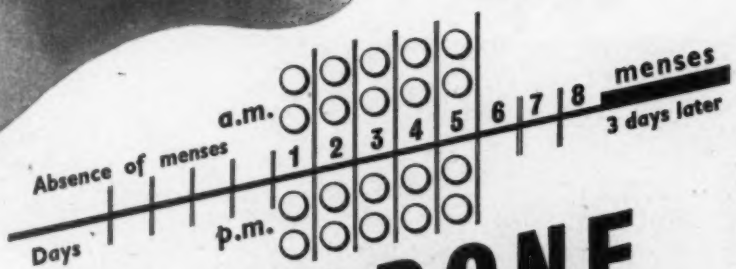

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Each Tablet contains Ethisterone 10 mg. Ethinyl Oestradiol 0.01 mg.
Box of 20 Tablets intended for a 5-day course
BASIC N.H.S. COST 8/6

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RELIEF OF PAIN
HYPERAEMIA
RELAXATION

Response to the percutaneous stimulation

of warmth with

FINALGON OINTMENT

in rheumatic and neuralgic conditions

tube of 20 g

COMPOSITION :

Nonylic acid vanillylamide 0.4 % and Nicotinic acid-β-butoxyethyl ester 2.5 % in a suitable ointment base

LEWIS LABORATORIES LTD., LEEDS 9

DIFFERING FROM TAB. CODEIN. CO. B.P.

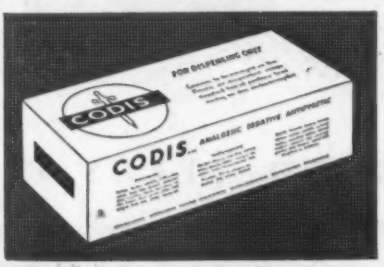
Codis contains soluble aspirin

COMBINED WITH CODEINE PHOSPHATE AND PHENACETIN

SOLUBLE ASPIRIN is now widely preferred to ordinary aspirin for general prescription. "Codis" is a codeine compound tablet of high quality that takes this important development into account.

The aspirin in Codis provides soluble calcium aspirin, which is formed as soon as the tablet is dissolved in water. This calcium aspirin will be more rapidly absorbed by the patient and is far less likely to cause gastric irritation.

Because of the ready dissolution and dispersion of the tablets, Codis will be found considerably easier to administer. Codis is thus suitable for prescription in all those cases which call for a codeine compound tablet.



COMPOSITION

Each Codis tablet contains:— Acid. Acetylsalicyl. B.P. 4 gr. Phenacet. B.P. 4 gr. Codein. Phosph. B.P. 0·125 gr. Calc. Carb. B.P. 1·2 gr. Acid. Cit. B.P. (Exsic.) 0·4 gr.

Codis (Regd.) is not advertised to the public

FOR PRESCRIPTION. Codis is available in distinctive gold foils of 6 tablets each.

PUBLIC SIZE. Pack of 20 tablets in foil 2/7 incl. P.T.

RECKITT & COLMAN LTD., HULL & LONDON (PHARMACEUTICAL DEPT., HULL)

In the severer forms of HYPERTENSION . . .

RAUWILOID + VERILOID

RAUWILOID + VERILOID is a striking example of drug complementation. It combines in one tablet 1 mg. of 'Rauwiloid' brand alkaloid hydrochlorides of *Rauwolfia serpentina* and 3 mg. 'Veriloid' brand alkaloids of *Veratrum viride*. 'Rauwiloid', by widening the margin between the effective therapeutic dose of 'Veriloid' and that producing side actions, enables satisfactory hypotensive doses of 'Veriloid' to be given to most patients. The combination is ideal for relieving the symptoms of moderate to severe hypertension. It is effective, safe, produces a minimum of discomfort to the patient and exerts a prolonged antihypertensive action.

"The addition of 'Rauwiloid' makes 'Veriloid' easy to administer, more effective and practically does away with unpleasant side reactions".

See *Amer. J. Med.*, (1954) 17 : 629.

Available in Bottles of 100 and 500 Tablets

RIKER

'RAUWILOID' and 'VERILOID' are Registered Trade Marks; Regd. Users

RIKER LABORATORIES LIMITED

LOUGHBOROUGH LEICS

a three-fold calming influence . . .

RELIEVES SPASM
RELAXES NERVOUS TENSION
LIQUEFIES STARCH MASS

BARDASE,* combining the antispasmodic, sedative and amylolytic properties of belladonna alkaloids, phenobarbitone and Taka-Diastase, presents a comprehensive therapeutic approach to the problem of visceral spasm. It has proved of great value in the relief and management of gastro-intestinal disturbances, particularly peptic ulcer and the irritable colon syndrome. BARDASE may also be prescribed as a useful adjunct to other treatment in cases of ulcerative colitis.

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Bardase

SPASMOLYTIC SEDATIVE DIGESTIVE AID

Yellow sugar-coated tablets supplied in bottles of 50 and 500

BARDASE LIQUID IS AVAILABLE IN BOTTLES CONTAINING 4 AND 16 FLUID OUNCES

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670

CUT COLDS SHORT

Just because little can be done to prevent the common cold, there is no reason why the secondary infections that so frequently follow it should be allowed full liberty to prolong the ill effects.

If given at the first sign of a cold, 'Sulfex' intranasal therapy controls these secondary invaders, curtailing the course of the illness, and lessening the risk of more serious sequelae.

'SULFEX'

Vasoconstriction in minutes...

...bacteriostasis for hours

Issued in 1-oz. and 8-oz. bottles

For cost to N.H.S., see latest M. & J. list sent out July, 1955

SMITH KLINE & FRENCH INTERNATIONAL CO.

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SEP103*

'Sulfex' is a registered trade mark . Samples available on request

Transvasin

brings the esters of NICOTINIC ACID SALICYLIC ACID p-AMINOBENZOIC ACID to the focal point of soft-tissue rheumatism

The esters in Transvasin, a new preparation developed by Hamol S.A., our Swiss associates, readily pass the skin barrier in therapeutic quantities and enable an effective concentration of the drugs to be built up where they are needed. Transvasin not only induces vasodilation of the skin with a superficial erythema, but also brings about a deep hyperaemia of the underlying tissues. It is non-irritant, and can be safely used on delicate skins. It is now being widely prescribed, with successful clinical results. Since a very small quantity is sufficient for each application, the cost of treatment is extremely low.

Salicylic acid tetrahydrofurfuryl-ester	14%
Nicotinic acid ethyl-ester	2%
Nicotinic acid n-hexyl-ester	2%
p-Aminobenzoic acid ethyl-ester	2%
Water-miscible cream base ad	100%

Transvasin is available in 1 oz. tubes, basic price 2/6 plus 7½d. P.T., and is not advertised to the public. Samples and literature will be gladly sent on application.

LLOYD-HAMOL LTD., 11 WATERLOO PLACE, LONDON, S.W.1. WHITEHALL 8654/5/6

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in more infections..

more effective

more conveniently

more quickly

Pfizer

Terramycin*

BRAND OF OXYTETRACYCLINE

TERRAMYCIN with its wider antibacterial range assures a greater chance of success in more infections than any other anti-infective agent.
There are tablets for adults, a palatable oral suspension for children, paediatric drops for infants and many other convenient forms for topical and parenteral use.
Normal temperatures in 24-48 hours are usual with TERRAMYCIN therapy.
TERRAMYCIN — administered promptly — frequently reduces the cost of health.

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WORLD'S LARGEST PRODUCER OF ANTIBIOTICS

PFIZER LTD · FOLKESTONE · KENT · TEL: FOLKESTONE 51771

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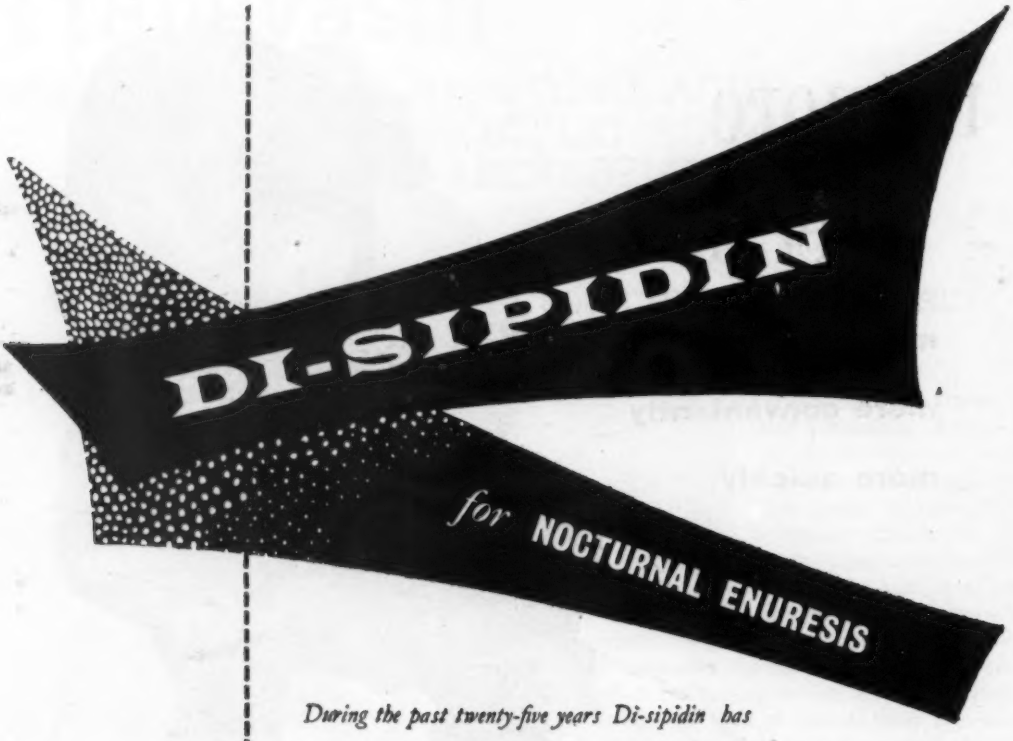

During the past twenty-five years Di-sipidin has become widely recognised in the treatment of diabetes insipidus and now, recently published clinical trials * *have pointed to its value in the control of adolescent and adult cases of nocturnal enuresis. Di-sipidin is a standardised preparation of the posterior lobe of the pituitary gland, specially made for use by nasal insufflation.*

* *References:* [1] B.M.J. (1954) 11, 1433. [2] (1954) B.M.J. 1, 1038. [3] (1955) B.M.J. 1, 1194.

PAINES & BYRNE LTD.,
PABYRN LABORATORIES,
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Seasonal illnesses come and go, but there is no season of the year when Tyrosolven Antibiotic-Anaesthetic Lozenges are not a valuable addition to the range of drugs used in throat infections. Tyrothricin, the active principle in Tyrosolven, is effective against a wide spectrum of bacterial flora — haemolytic streptococci, enterococci, vibrioform and fusiform bacilli, and spirochaetes; there are therefore few common mouth infections they will not relieve. Tyrosolven also contains benzocaine, an effective analgesic.

ACTIVE CONSTITUENTS:
Tyrothricin 1 mg., benzocaine 5 mg.

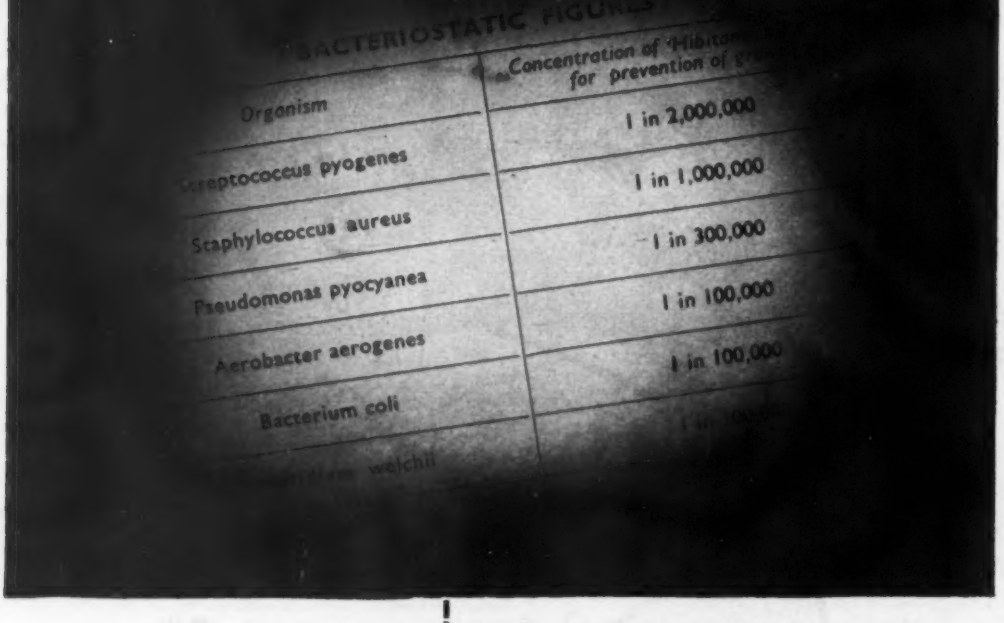
Tyrosolven

Tyrosolven has never been advertised to the public.

William R. WARNER & CO. LTD.,
Power Road, London, W.4.

Packing:
Packs of 20 lozenges; dispensing packs of 250 supplied to chemists at 16/8.

an entirely new anti-bacterial agent for local application



'Hibitane'

Trade Mark (Chlorhexidine)

References:

1 *Brit. Med. J.*, 1955, **i.** 81.
2 *Ibid*, 1955, **i.** 985.
3 *Brit. J. Pharmacol. Chemother.*, 1954, **9**, 192.

'Hibitane' Concentrate 2%

Specially prepared to be diluted for ordinary antiseptic purposes. Mildly detergent and anti-rusting.

'Hibitane' Powder

For the preparation of pure aqueous and alcoholic solutions, incorporation in creams, ointments, etc.

'Hibitane' Antiseptic Cream 1%

For lasting disinfection of the hands and prevention of cross infection. Also as a beneficial skin application.

'Hibitane' Obstetric Cream 1%

A non-irritant antiseptic lubricant for vaginal examinations. Combines rapid and complete antibacterial action with persistent effect.

IMPERIAL CHEMICAL (PHARMACEUTICALS) LTD., FULSHAW HALL, WILMSLOW, MANCHESTER
A subsidiary company of Imperial Chemical Industries Limited.

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to live in freedom . . .

Treatment with EPANUTIN gives four out of five epileptics the freedom to live a normal life. It enables them to work as others do and to enjoy pleasures normally beyond their reach. It prevents or greatly decreases the severity of the patient's seizures with minimal hypnotic or narcotic effects. In cases where an added sedative effect is necessary EPANUTIN & PHENOBARBITONE is an effective combination.

Epanutin & Phenobarbitone capsules containing 0.1 g. (1½ grains) Epanutin (phenytoin sodium) with 0.05 g. (¾ grain) phenobarbitone may also be usefully employed in the transition from phenobarbitone to Epanutin.

EPANUTIN

● Epanutin Capsules (1½ grs.) and Epanutin with Phenobarbitone Capsules are obtainable in bottles of 100 and 1,000.

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Thromboral

A treatment for Hæmorrhagic ulcers occurring in the alimentary canal

THROMBORAL has been developed for the systemic control of haemorrhagic complications of peptic and duodenal ulcers; bleeding from ruptured oesophageal varices; denuded buccal ulcer and cases of epigastric distress exhibiting signs of internal haemorrhage.

THROMBORAL contains active THROMBIN in massive doses, the instantaneous haemostatic effect of which is preserved by reduction of the pH of the gastric mucosa. Natural physiological coagulation occurs at the site of bleeding.

THROMBORAL is presented as a complete treatment for oral administration over a 24 hour period.

THROMBORAL can be of inestimable value where the age or physical condition of the patient makes surgical intervention undesirable.

MAW'S Ethical Products also include

NAPHTHIONIN A haemostatic of general action for administration by the parenteral route; used pre-operatively or post-operatively.
Naphthionin does not control haemophiliac bleeding for which Thrombin (Maw) is the haemostatic of choice.

THROMBIN (MAW) A haemostatic for topical use in surgical procedures for the immediate arrest of haemorrhage.

THROMBOPLASTIN (MAW) For reagent use in the determination of the prothrombin time in anticoagulant therapy.

REAZIDE (Cyanacetic Acid Hydrazide) A new hydrazide for specific use in all forms of tuberculosis, particularly in chronic cases. Clinical trials in progress.

HEMATRIX An ointment for the treatment of haemorrhoids, pruritus ani and painful, inflammatory, pruritic and eczematous lesions of the skin in the anal region. Prescribable on E.C.10.

Further information available on request from Dept. AS

Maw's

ETHICAL PRODUCTS

S Maw Son and Sons Limited Barnet England

TIME AND IRON DEFICIENCY ANAEMIA

THIS WOMAN is six months pregnant; her haemoglobin concentration is low. It is important that she should not be anaemic at term, yet time is not on her side. There may be a delay of up to four weeks before any response is shown to oral iron therapy; and progress thereafter may not be rapid enough to secure a normal haemoglobin value in the time that remains.

A CLEAR CASE FOR 'IMFERON', new iron preparation for intramuscular injection. 'Imferon' can be relied upon to restore the haemoglobin concentration to normal levels in from 4 to 7 weeks.

FULLY DESCRIPTIVE LITERATURE is available and a Technical Information Service is always at your disposal.

A clear case for **IMFERON** IRON-DEXTRAN COMPLEX TRADE MARK

BENGER LABORATORIES LIMITED · HOLMES CHAPEL · CHESHIRE

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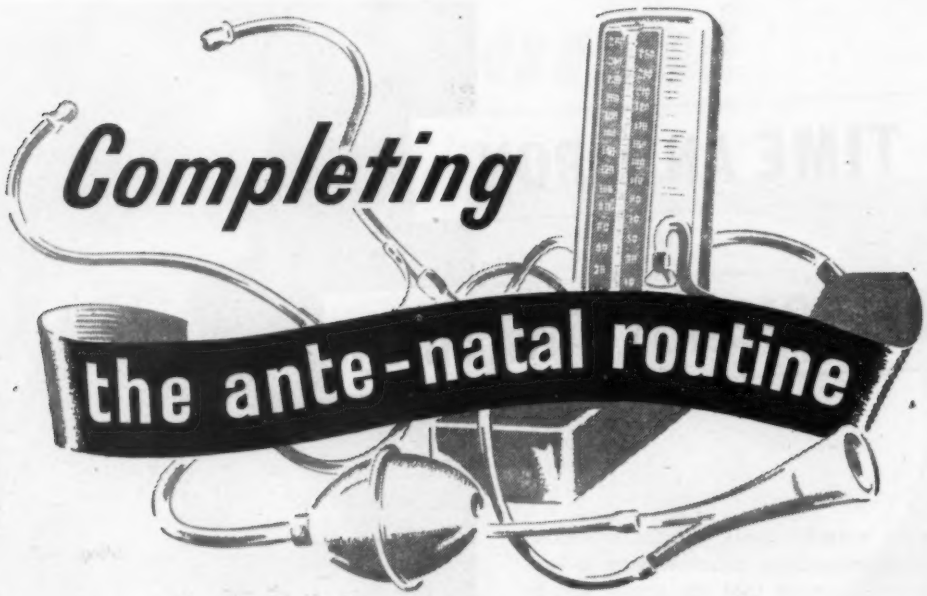
13. (REV.2)



Of the various measures directed towards ante-natal care, none is more vital than a well-planned dietary supplementation. Such routine however need be no arduous matter to the mother. Prenatal Capsules *Lederle* avoid the need for any further supplements by combining many nutritional factors in a single preparation.

The simple routine of two Prenatal Capsules daily is a wise procedure from the time that pregnancy is confirmed. It can advantageously be continued throughout the period of lactation. This ensures a balanced intake of vitamins, bone-forming minerals and haematinic factors sufficient to meet the nutritional requirements of both mother and child.

Prenatal capsules

Each capsule contains : Vitamin A, 2,000 I.U. ; Vitamin D, 400 I.U. ; Thiamine Hydrochloride (B_1), 2 mg. ; Riboflavine (B_2), 2 mg. ; Ascorbic Acid (C), 35 mg. ; Nicotinamide, 7 mg. ; FOLVITE* Folic Acid, 1 mg. ; Calcium (in $CaHPO_4$), 250 mg. ; Phosphorus (in $CaHPO_4$), 190 mg. ; Dicalcium Phosphate Anhydrous ($CaHPO_4$), 869 mg. ; Iron (In $FeSO_4$), 6 mg. ; Ferrous Sulphate Exsiccated, 20 mg. ; Manganese (in $MnSO_4$), 0.12 mg. ; Vitamin B_{12}, 1 microgram ; Vitamin K (Menadione), 0.5 mg.

Bottles of 100 and 1,000. **Regd. Trade Mark.*

Lederle

LEDERLE LABORATORIES DIVISION
Cyanamid Products Ltd. BUSH HOUSE, ALDWYCH, LONDON, W.C.2. TEMPLE BAR 5411

Pre-eminence in PENICILLIN THERAPY

IN the majority of penicillin-sensitive infections, benzylpenicillin and procaine penicillin continue to provide the most reliable and convenient treatment with the greatest degree of control.

Amongst these well-established forms of penicillin, preparations by DC(B)L hold an unsurpassed reputation for clinical dependability and convenience of administration.

The wide range of DC(B)L penicillin preparations provides flexibility and precision in prescribing.

IMMEDIATE HIGH LEVELS	**Potassium penicillin G (Buffered)** **Sodium penicillin G**
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FOR MIXED OR UNIDENTIFIED INFECTIONS	**'Distavons'**

Distributed by:

ALLEN & HANBURYS LTD. BRITISH DRUG HOUSES LTD.
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Deltastab

(PREDNISOLONE)

Boots Pure Drug Company Limited have pleasure in announcing the availability of Deltastab (delta-hydrocortisone) a significant advance in steroid therapy

Distribution of this drug is at present confined to hospitals.

Packing: 5 mg tablets in bottles of 30

BOOTS PURE DRUG COMPANY LIMITED NOTTINGHAM

A SAFE ANTIHYPERTENSIVE

Serpasil

pure crystalline reserpine from Rauwolfia

ACTS ON THE HYPOTHALAMUS

REDUCING MENTAL TENSION AND STRESS

IN HYPERTENSION

AND IN ANXIETY STATES

Tablets of 0.1 mg., 0.25 mg. and 1 mg.

Ampoules of 1 mg. and 2.5 mg.

Serpasil elixir now available

Bottles of 100 c.cm.

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'Serpasil' is a registered trade mark. Reg. US

CIBA LABORATORIES LIMITED · HORSHAM · SUSSEX

Telephone Horsham 1234. Telegrams Cibclabs, Horsham.

4/5

Attacks of **MIGRAINE**

respond to **ORAL TREATMENT** with

CAFERGOT

The parenteral administration of cerebral vasoconstrictors of the ergot series was formerly indispensable to abort so many as 80 to 90 per cent. of migraine attacks.

★ **CAFERGOT** given **ORALLY** is effective in at least 80 per cent. of attacks.

CAFERGOT Tablets contain

Ergotamine Tartrate B.P. 1 mg.
Caffeine B.P. 100 mg.

and are presented in bottles of 20, 100 and 500.

★ CAFERGOT Tablets have been *reduced in price* on 15th August, 1955.

Full information and samples will be sent upon request.

SANDOZ PRODUCTS LIMITED

134, Wigmore Street, London, W.1.

SANDOZ

FOR INSOMNIA

prescribe a new mild hypnotic

'NOLUDAR'

TRADE MARK BRAND

Moderately rapid onset of action

Moderate duration of effect

Well tolerated

No "hangover"

a discovery by

ROCHE

'Noludar' may also be prescribed as a sedative for patients suffering from anxiety, cardiac neurosis, hypertension, nervousness, etc. 'NOLUDAR' 2, 4-dioxo-3, 3-diethyl-5-methyl-piperidine is available in tablets, 200 mg. in bottles of 100 and 500; and for the pocket in tins of 10.

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treatment or prophylaxis

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A CONCEPT OF DIABETES*

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DIABETES mellitus is a fascinating condition. For one thing, the more we know about it the less we understand it; and for a second thing, it can be diagnosed before it is apparent. I shall suggest that diabetes may be inherited, congenital, or acquired; that it is present not just when hyperglycæmia is found but for years before—in fact from birth.† I shall suggest that it is an innate obscure disorder of carbohydrate metabolism, which manifests itself in curious diverse ways—in the hypertrophied islets of overweight stillborn babies; in micro-aneurysms in the retina; in cardiac infarction in the female; and in excessive tallness in the child and obesity in the mother—apart from the clinically obvious glycosuria, ketosis, and hyperglycæmia.

Diabetes and Size

Diabetic Mothers

It has been known for some time that the infant of the diabetic mother is often stillborn, oversize, and overweight. Such a baby is also red, fat, flabby, œdematous, and weak. It respires with difficulty and has hepatomegaly, cardiac hypertrophy, erythroblastosis, and—most significant—hyperplasia of the islets of Langerhans (Dubreuil and Andérodias 1920). We now know, too, that the woman who develops diabetes only later in life may give birth to this sort of baby years before her diabetes is evident. Fig. 1 shows a baby borne by a woman who was in the "prediabetic" phase at the time of her pregnancy. Table I illustrates the frequency of large babies and stillbirths in prediabetic women in the Cape Peninsula. 62% of women who had babies before becoming diabetic claimed at least one to have been over 10 lb. in weight at birth (Jackson 1952). The stillbirth-rate was also much higher in prediabetic than in non-prediabetic women.

* Based on a talk given to the Research Forum, Groote Schuur Hospital, in March, 1954.

† This raises the question of the definition of the term "diabetes." Most people would say "prediabetes" here; but, since some quite definite clinical features may be manifest in this state, it is evident that the disorder which will eventually lead to hyperglycæmia is already making itself known. Is not this also to be called "diabetes"? It is not pre-anything, it is already there.

Fig. 1—"Cushingoid" baby of prediabetic coloured mother who had produced 4 children weighing at birth more than 10 lb. each, followed by 2 stillbirths (one with greatly hypertrophied islets of Langerhans). During her last pregnancy the mother had an abnormal carbohydrate tolerance, which returned to normal after delivery. Her own mother was diabetic. The baby, who weighed 13 lb. and was delivered by cæsarean section, is depicted with a normal child several days older, who weighed 6½ lb. at birth. Note fat flabby, œdematous, congested appearance.

Diabetic Fathers

Since diabetes is largely hereditary, it would not be surprising if the tendency to stillbirths and/or large babies were carried also by the father. We found that the diabetic and prediabetic fathers certainly did tend to produce large children (table I); but the same table shows

TABLE I—CHILDREN OF (PRE)DIABETIC FATHERS, PREDIABETIC, (PRE)ACROMEGALIC, AND CONTROL MOTHERS

Children	No.	Birth-weight (lb.)				Stillborn (%)
		Less than 8	8·0–8·9	9–10	More than 10	
Of prediabetic mothers ..	428	22%	32%	15%	31%	15
Of (pre)diabetic fathers* ..	398	48%	32%	9·3%	10·7%	<3
Of (pre)acromegalic mothers†	61	56%	26%	8%	10%	0
Of control mothers	819	72%	19%	5·3%	3·7%	<3

Only one mother out of eleven actually developing acromegaly had a child weighing over 9 lb. at birth.

* Plainly diabetic at time of fatherhood or developed diabetes later.

† Plainly acromegalic at time of motherhood or developed acromegaly later.

that the stillbirth-rate among children of prediabetic fathers was no greater than among children of normal parents. The figures represent the combined results of interviews in Cape Town and Boston and are highly significant statistically (Jackson 1954). Fig. 2 shows that this tendency to produce large babies is not just concerned with freak 10-pounders, but that there is a general or mean increase in birth-weight of the children of prediabetic parents, with shift to the right of the mode: 7 lb. in the controls, 8 lb. in the children of prediabetic fathers, and 9 lb. in those of prediabetic mothers.

Ætiology

Figs. 3 and 4 are attempts to interpret these results. The difference between the sizes of infants of prediabetic fathers and of normal parents can only be due to inheritance, whereas the difference between the sizes of infants of prediabetic mothers and of prediabetic fathers is presumably caused by the maternal internal environment—i.e., to local happenings in the uterus during gestation. (Penrose [1952] claims that the excessively large babies of some non-diabetic families are due partly to heredity and partly to the maternal internal environment.) On the other hand, the mother is entirely responsible for the high stillbirth-rate, because (as already stated) the stillbirth-rate among children of prediabetic fathers is no greater than among children of normal parents (fig. 4).

Examples

(1) Fig. 5 is the family tree of two sisters with a diabetic mother. Mrs. A exhibits no overt signs of diabetes but had a somewhat abnormal glucose-tolerance curve during her last pregnancy. Her sister has developed diabetes since the birth of her last baby. Their obstetric stories are unfortunate. The 4 stillbirths would probably have been saved, if the prediabetic condition had been recognised in time. Mrs. A's last pregnancy was terminated by cæsarean section at 37 weeks, and a live baby weighing 6½ lb. was obtained.

(2) Fig. 6 illustrates the fecundity of the prediabetic. Mrs. B has been pregnant 26 times: every baby weighed more than 11 lb., 12 were stillborn, and there were 5 miscarriages.

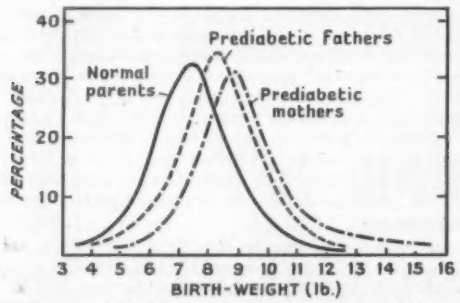

Fig. 2—Frequency distribution curves of birth-weights of babies born to normal parents, to prediabetic fathers, and to prediabetic mothers.

Her mother was diabetic, Mrs. B became diabetic four years after her last pregnancy, and her eldest daughter is diabetic.

(3) The third patient is a German woman I saw recently. In 1917 at the birth of her second large baby, which weighed 12 lb., her doctor said: "When I come to deliver your off-spring I don't see a baby, I see an ox." He did not know that this meant she would develop diabetes nearly forty years later. Her fasting blood-sugar is now only 129 mg. per 100 ml., but the ox story clinches the diagnosis of diabetes.

Recognition of the Prediabetic Woman

Can we recognise the prediabetic early? Starting with a very large baby or an unexplained stillbirth, can one detect whether prediabetes in the mother was the cause? Table II shows that one often can. By testing the glucose tolerance of mothers after childbirth we had, up to 1952, discovered 15 unsuspected diabetics and 11 with slightly abnormal curves whom I believe to be "pre-diabetics" (Jackson 1953). These findings have since been corroborated by Kritzer (1952) and Lund and Weese (1953). It is therefore desirable to test the glucose tolerance of all mothers who have overlarge babies or stillbirths, particularly if they give a family history of diabetes or have glycosuria during pregnancy. Glycosuria during pregnancy is often not benign, and conversely it is perfectly possible (as in 4 of my cases) to find a diabetic type of glucose-tolerance curve without glycosuria because of a high renal threshold (Lund and Weese also found this). The best time to test the glucose tolerance is during a subsequent pregnancy, for reasons given below.

Fig. 7 shows my criteria of abnormality (using the standard oral 50 g. glucose test, capillary blood, and a modified Hagedorn-Jansen method of estimation). I consider a curve "prediabetic" if the late values, at 2–3 hours, are in the "diabetic zone," whatever the fasting and maximum may be. As indicated in the figure, this means that a value above 140 mg. at 2 hours, or 130 at $2^1/_2$ hours, suggests pre-diabetes, and values between these and 120 are suspicious or "doubtful." Of the last babies born to the 10 mothers with such a prediabetic curve (table II) 5 were stillborn and 6 weighed more than 10 lb. It certainly looks, therefore, as if this rather minor aberration in tolerance curve were significant, and this is supported by the results of long-term studies by John (1950).

Follow-up examinations are beginning to vindicate the correctness of this conclusion, despite the criticism levelled at it (*British Medical Journal* 1952). Figs. 8–10 show cases with suspicious obstetrical histories and suspiciously high blood-sugar values at 2–$2^1/_2$ hours on the first tolerance curve. Tests repeated later showed much more definite abnormality in a diabetic way. It is tempting to believe that the third patient's stillborn baby weighing 14 lb. in 1951 could have been saved had the mother attended our clinic when she was pregnant. The fourth patient (fig. 11) showed a variability of glucose tolerance in different circumstances, with a progression towards definite diabetes, which is made more frank in this case by a single dose of corticotrophin. The fifth set of curves (fig. 12) show a remarkable constancy in that suspicious 2-hour reading, but no progression to more certain diabetes has yet taken place.

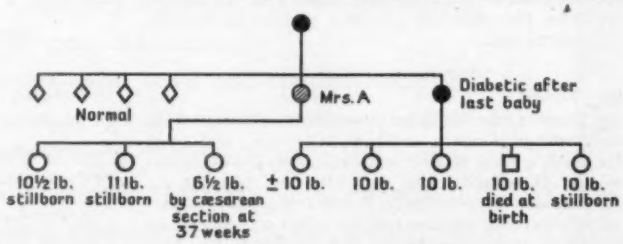

Fig. 5—Family chart of Mrs. A.

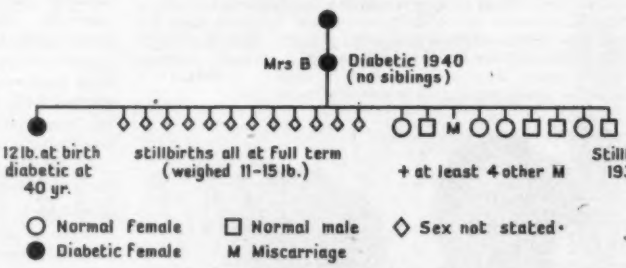

Fig. 6—Family chart of Mrs. B.

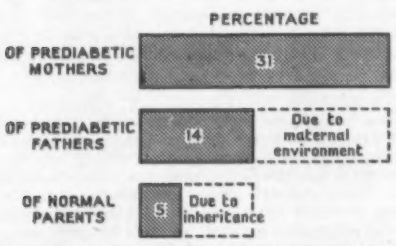

Fig. 3—Comparison of percentages of infants weighing at birth more than 10 lb. each of prediabetic mothers, of prediabetic fathers, and of normal parents, showing apparent importance of maternal internal environment and of inheritance in producing large babies.

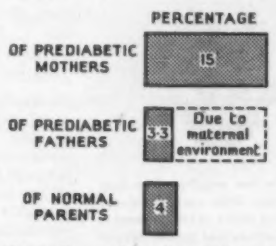

Fig. 4—Comparison of percentages of stillborn children of prediabetic mothers, of prediabetic fathers, and of normal parents, showing difference apparently due solely to maternal environment.

Child's Size and Subsequent Diabetes

There is considerable evidence that chidren, before becoming diabetic, grow excessively in both size and weight (Adams 1929, Priscilla White et al. 1953). This

finding has several experimental counterparts—e.g., Foglia's (1944) report that subtotal pancreatectomy in rats leads first to obesity and then to diabetes. Priscilla White et al. (1953) show that non-diabetic children of diabetic mothers have a very pronounced tendency to be abnormally tall and heavy (table III). Thus a diabetic mother is likely to have not only large fœtuses but also large children.

Prediabetic Mothers' Increase in Size during or after Pregnancy

Prediabetic mothers tend to gain excessively and rapidly in weight either during or immediately after a pregnancy (Sheldon 1949).

A woman, aged 44, had a sylph-like figure until immediately after her first pregnancy, sixteen years ago, when she gained weight rapidly. Today she weighs 21 st. 10 lb., has been diabetic for six years, and has had 5 children, of which 3 weighed more than 10 lb. each, and 1 stillbirth. All her pregnancies were associated with toxæmia.

TABLE II—GLUCOSE-TOLERANCE CURVES IN PARTURIENT MOTHERS OF BABIES IN DIFFERENT WEIGHT GROUPS

Last baby	Mothers' glucose-tolerance curve			Total
	Diabetic	Pre-diabetic	Normal	
Less than 7 lb. ..	0	1	41	42
7–8½ lb.	2	1	43	46
8½–10 lb.	5	2	38	45
More than 10 lb...	8	6	26	40
Total ..	15	11*	148	173
Stillborn	7 (47%)	5 (45%)	6 (4·1%)	18 (10·4%)

* The weight of one of these babies (which was stillborn) was unknown.

Diabetes and Obesity in Middle Age

Gilbert (1949) interviewed women ten to twenty years after they had produced large babies. He found 6 who had become diabetic, and all these 6 were obese. The connection between diabetes and obesity has been shown experimentally—e.g., the hereditary obese-diabetic syndrome in mice (Mayer et al. 1951), and Long's (1952) demonstration that hypothalamic obesity in rats leads to diabetes. To say that these are special types of diabetes explains nothing: there are many "special types of diabetes," but the features they share are more puzzling than those which distinguish them. Thus, both "obese" and "lean" types develop the same array of vascular disorders, are subject to the same embryopathies, and, apparently, even show the same type of inheritance pattern and frequency (Pirart 1954).

Rôle of Growth Hormone

Young (1953) suggests that growth hormone is the link between size and diabetes. Certainly growth hormone can stimulate the islets of Langerhans (Conn 1945, Young 1953), worsen human diabetes, and produce diabetes in some animals—though not during pregnancy nor during the growth phase (Young 1951). Acromegalics may develop diabetes; but they do not seem to do so very often, for only 1 or 2 of about 60 cases at the Massachusetts General Hospital needed insulin.

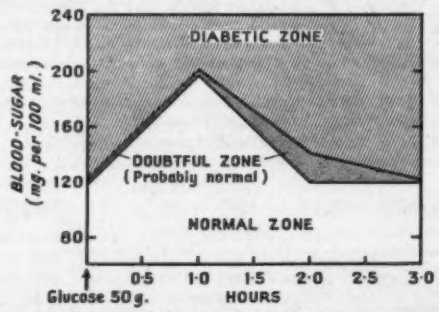

Fig. 7—Author's interpretation of 50 g. oral glucose-tolerance curve (capillary blood; Hagedorn-Jansen method).

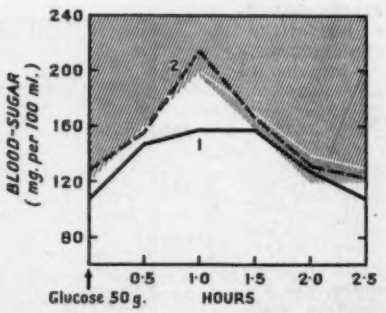

Fig. 8—Glucose-tolerance curves at interval of 4 years, indicating progression of prediabetes in a mother who had borne four large children: (1) in 1949, two months after bearing a baby weighing 10½ lb.; (2) in 1953.

Figs. 8–12 were obtained from tolerance curves obtained under standard conditions with all patients on high-carbohydrate diets, and may be compared with large numbers of tolerance curves obtained in controls in all ways similar except for the absence of suspicious obstetric histories (Jackson 1952).

Growth hormone given to pregnant, non-diabetic animals can almost certainly cause the production of large fœtuses showing typical "diabetic" embryopathy (Hultquist and Engfeldt 1949). On the other hand, growth hormone does not appear to be implicated in the tie-up between diabetes and obesity, since its metabolic action is concerned with retention of nitrogen and not fat, unless it has a fattening effect by increasing appetite (Young 1951).

Further, those diabetic and prediabetic women who produce large babies do not have an acromegaloid appearance, as one would expect if they had too much growth hormone; nor has excess of growth hormone ever been demonstrated in them. Now, surely, if growth hormone causes embryopathy in man, acromegalic mothers should have enormous babies and stillbirths. But they do not: of 14 children of 11 mothers in whom acromegaly was active or just developing during their pregnancies only 1 weighed more than 9 lb. at birth and none was stillborn. If we consider all the children of our acromegalic women, including those born before the onset of the mother's acromegaly—i.e., in the "pre-acromegalic" phase—we observe an apparent tendency for the birth-weights to be higher than those of the controls (table I). This tendency is of the same order as with the prediabetic fathers, and very much less than with the prediabetic mothers. If this is a valid finding (and the figures

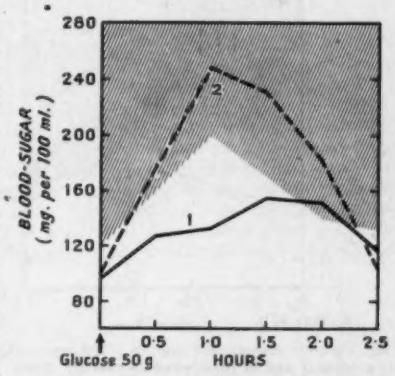

Fig. 9—Glucose-tolerance curves with interval of 2 years in a mother who had produced a stillborn child weighing 12½ lb.: (1) six days after stillbirth; (2) 2 years later.

are not claimed to be statistically significant) its meaning is unknown.

Rôle of Insulin

Insulin is a growth hormone (Best 1953, Young 1953); in fact the pituitary growth hormone will not function without insulin. Are the beta cells of the pancreas stimulated to produce excessive quantities of insulin before they are ultimately damaged by exhaustion? In laboratory animals many substances can apparently stimulate these cells, including the pituitary, the adrenal cortex, the alpha cells of the pancreas, excessive carbohydrate intake, and perhaps some unknown polysaccharide metabolic abnormality (Warren and LeCompte 1952). Excess insulin activity has been claimed to be present in the plasma of acromegalic diabetics (Randle 1954); and in certain types of diabetes in animals (e.g., the recessive-diabetic-obese syndrome in mice) abnormally large amounts of insulin can be extracted from the pancreas (Mayer et al. 1951). In this connection "pregnancy pancreas" is of interest. During normal pregnancy the islets of Langerhans in the mother enlarge greatly. Exactly similar, enormously hypertrophied islets can be found in the stillborn infant of a diabetic mother (fig. 13). Even more significant is the finding of these islets in the stillborn of a prediabetic mother. Van Beek (1952) observed some stillborn babies with such islets and was surprised that their mothers were not diabetic. However, she followed them up for ten to twenty years, and 5 of them became diabetic. Miller (1945) has reported the same thing in 2 cases, and we can confirm this from our observations in Cape Town. Diabetes, then, is in a unique position, since it can sometimes be predicted twenty years before it becomes manifest, by looking at the cells of another individual!

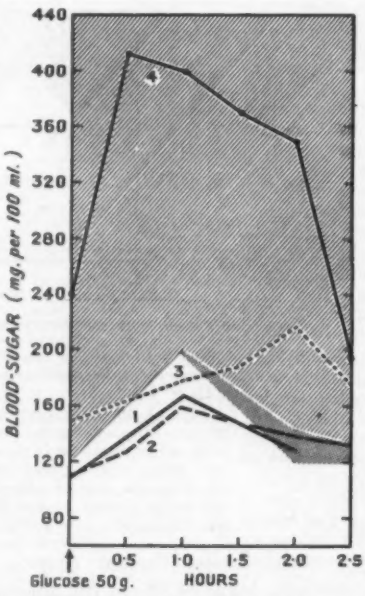

Fig. 10—Progression of prediabetes in a woman who was told to return to the clinic whenever pregnant but did not: (1) in 1950 nine days after bearing baby weighing 11½ lb.; (2) in 1951; (3) in 1953 after bearing stillborn baby weighing 14½ lb.; (4) in 1955.

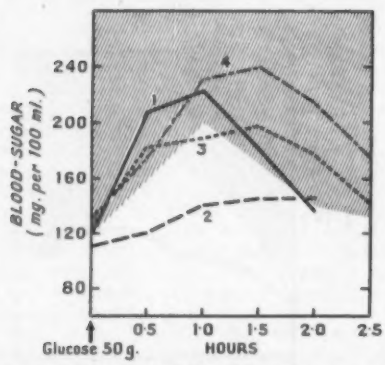

Fig. 11—More complicated case, in which stress of pregnancy and of corticotrophin therapy diminished the glucose tolerance and progression to definite diabetes took place: (1) in 1951 six days after bearing stillborn baby (only child) weighing 8½ lb.; (2) six months later; (3) in 1953; (4) in 1953 after administration of corticotrophin 100 units.

Rôle of Glucocorticoids

The patient who has Cushing's syndrome or has been treated with cortisone becomes obese and gives an abnormal glucose-tolerance curve of diabetic or "prediabetic" type. There are many other links between the adrenal corticoids and diabetes: the babies of diabetic and prediabetic mothers look as if they have Cushing's syndrome, and occasionally a patient treated with corticotrophin develops the typical retinal lesions of diabetes (Becker 1952). (I have seen them develop rapidly in a diabetic treated with cortisone for rheumatoid arthritis.) Cortisone will worsen diabetes in man and animals, whereas both adrenalectomy (Green et al. 1950) and Addison's disease reduce the insulin requirement. The patient with Addison's disease, moreover, may be very sensitive to the diabetogenic effect of cortisone, and I know of a case in which fatal diabetic coma was produced by treatment with cortisone. Experimentally cortisone can induce hyperplasia of the beta cells of the pancreas in animals, some species of which later develop diabetes (Frawley 1953, Hausberger and Ramsey 1953).

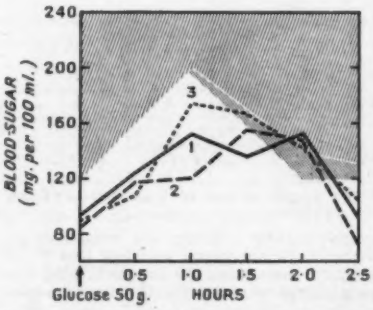

Fig. 12—This patient does not yet give a definite diabetic curve, but the suspicious 2-hour value is constant: (1) 38 weeks pregnant; (2) 16 days after producing stillbirth; (3) 10 months later.

There is a particular relation of the corticoids to pregnancy, in which their production is greatly increased (Gemzell 1953, Venning and Browne 1947). Hoet (1951) and Hoet and Lukens (1954) experimented on rabbits (figs. 14–18) and obtained the following results:

(1) During a normal pregnancy the change in intravenous glucose tolerance is slight (fig. 14). A small dose of alloxan, insufficient by itself to produce diabetes, was nevertheless sufficient, with the diabetogenic effect of pregnancy, to give a diabetic curve (fig. 15). The fœtus died, and the curve returned to normal. Hoet in this way simulated the "prediabetes" of women, which shows up only in pregnancy.

(2) Figs. 16 and 17 show the lack of effect of growth hormone on the tolerance of a pregnant rabbit, and the lack of effect of a small dose of cortisone on the tolerance of a non-pregnant rabbit. However, the same dose of cortisone in the pregnant rabbit produced a grossly diabetic curve, which again fell

TABLE III—GROWTH AND GLUCOSE TOLERANCE OF CHILDREN OF DIABETIC PARENTS

(After Priscilla White et al. 1953)

Children	Sex	No.	Height 3 in. above standard	Weight 30 lb. above standard	Glucose tolerance	
					Hyperglycæmia	Hypoglycæmia
Of diabetic mothers	M F	51 54	57% 31%	50% 20%	28	7
Of diabetic fathers	..	25	..	..	3	2

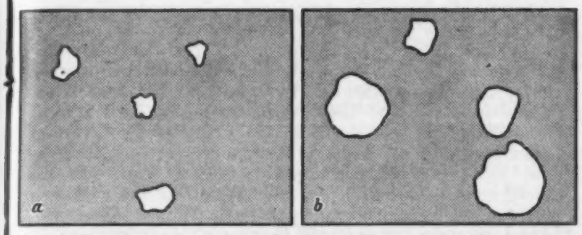

Fig. 13—Tracings of projections of typical microscopical fields of islets of Langerhans in newborn of normal mother (*a*) in comparison with islets from a newborn of diabetic mother (*b*) (same magnification).

after death of the fœtus (fig. 18). The diabetogenic effect of pregnancy was thus brought out by subclinical doses of either alloxan or cortisone.

de Costa and Abelman (1952) reported on a rabbit which produced excessively large stillborn fœtuses after being treated with cortisone during pregnancy.

Against these impressive effects of cortisone it must be noted that:

(1) Glucocorticoid excretion is not increased in uncomplicated diabetes (Talbot et al. 1951).

(2) In laboratory animals glucocorticoids do not usually increase the size of the fœtus.

(3) Babies born to mothers with Cushing's disease in my small series of about 10 babies were neither large nor dead.

(4) Cortisone and corticotrophin are really not very potent diabetogenic agents in man: of all the patients with treated rheumatoid arthritis observed at the Massachusetts General Hospital only 1 whose carbohydrate metabolism had apparently been previously normal developed frank diabetes.

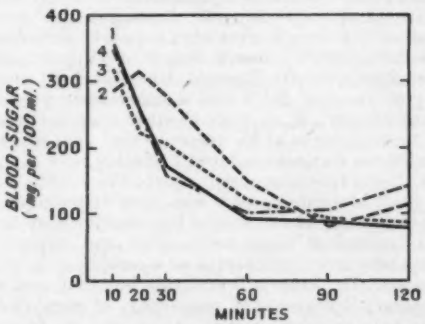

Fig. 14—Intravenous glucose tolerance of pregnant rabbit, indicating minimal change: (1) before pregnancy; (2) on 25th day of pregnancy; (3) on 30th day (1 day after delivery); (4) 5 days after delivery.

Summary

In conclusion we cannot really say what factors link increased size with diabetes. Inheritance plus growth hormone may be responsible for the large size of babies, the growth hormone overstimulating the production of insulin. Corticoids may be responsible for the stillbirths. The whole position is complicated because in animals any experimental method of producing diabetes in the mother (e.g., pancreatectomy or alloxan) may produce the same embryopathy. Perhaps simple hyperglycæmia will turn out to be the important factor, even in pre-diabetes, in which the raised blood-sugar level may not be recognised.

Diabetes as an Innate Disease present from Birth

Several facts suggest that diabetes is present from birth but only later becomes evident and measurable by the crude yardsticks of glycosuria and hyperglycæmia.

First we have this prediabetic embryopathic syndrome, which seems to have no limit to the time it extends back into the past of a given patient (Pirart 1954). This is indicated in table IV and illustrated by one old but intelligent woman who claimed to have borne a 12-lb. baby fifty-one years before she became overtly diabetic.

Colwell (1942) plotted graphs of the increase of insulin requirement with age in very many diabetics, by extrapolating backwards, found that these lines, which were straight, nearly always hit zero at the time of birth! He concluded that "diabetes starts at birth." (Probably we should not find the same nowadays, since diabetes, being better controlled, may not continue to deteriorate, as assessed by increasing insulin requirement.)

Very recently Priscilla White et al. (1953) found that a high proportion of children of diabetic mothers had

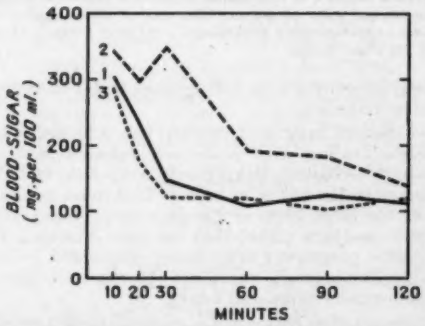

Fig. 15—Intravenous glucose tolerance of pregnant rabbit pretreated with alloxan, showing that combined diabetogenic effects of the subminimal alloxan dose plus pregnancy produce a diabetic curve which reverts to normal after resorption of the fœtus: (1) 9 days after administration of alloxan (1st day of pregnancy); (2) on 15th day of pregnancy (complete resorption takes place in following days); (3) after resorption.

plainly diabetic glucose-tolerance curves (table III). They claim 28 out of 105, but on re-examining the glucose-tolerance curves they published I should put the proportion considerably higher; for 32 of 84 curves gave values over 140 mg. at 2 hours. Certainly, the proportion is far higher than could be explained by any previous theory of diabetic inheritance. Furthermore, though we have not yet got the full figures, the proportion of diabetic curves in children of diabetic fathers is far less. This shows fairly clearly that the diabetic maternal internal environment may itself adversely affect the child—i.e., it is diabetogenic, producing a congenital but not inherited diabetes. This idea has experimental backing, in that Bartelheimer (1953) and Bartelheimer and Kloos (1952) claim that rats made mildly diabetic with alloxan

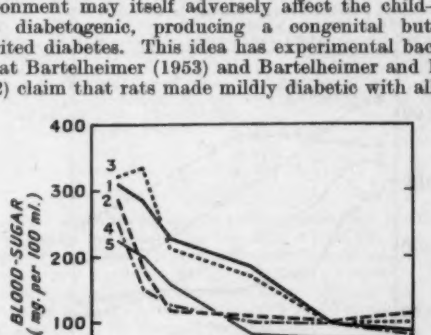

Fig. 16—Lack of effect of growth hormone on glucose tolerance of pregnant rabbit: (1) before pregnancy; (2) on 15th day; (3) on 19th day; (4) on 21st day; (5) on 24th day. Growth hormone 5 mg. per kg. of body-weight was given daily from 12th day onwards.

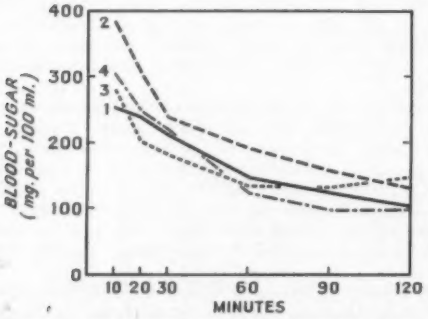

Fig. 17—Lack of effect of subminimal doses of cortisone 5 mg. per kg. of body-weight daily on glucose tolerance of non-pregnant rabbit: (1) before administration of cortisone; (2) after 3 days; (3) after 8 days; (4) after 13 days.

may bear progeny which first become larger than normal and later diabetic.

These results may well explain the difficulties facing geneticists dealing with diabetes; familial diabetes is not entirely hereditary but is partly congenital and caused by damage to the fœtus in utero. This must remind one again of the large islets of Langerhans in these children of diabetic mothers. Have they not been damaged during the diabetic pregnancy after being stimulated to hypertrophy? Furthermore these are the same children who grow abnormally large and heavy.

One can go even further. Ditzel et al. (1954) show that a characteristic abnormal vascular pattern is recognisable in the conjunctivæ of diabetics. They did not find these abnormalities in 75 normal children but found them in 35 of 75 children of diabetic or prediabetic mothers, particularly in those with abnormal glucose-tolerance curves. At the time of examination these workers were not aware into which groups the children fell.

Other findings, too, suggest that the vascular abnormalities of diabetes are not "complications" but an integral part of diabetes (Dry and Hines 1941, Lundbaek 1953), and may be present occasionally before the blood-sugar level is high (Wagener 1945).

A woman of 60 presented with myxœdema without glycosuria. Five months later she complained of polyuria and was discovered to be diabetic. She already had a patch of dry gangrene on her left heel, considerable peripheral neuropathy, and bilateral retinopathy with hard exudates and aneurysms, and arterial pulsation was absent from both legs.

On the other hand, acquired or experimental diabetes can apparently lead to the same vasculopathy, which must here be a "complication." Growth hormone (Lukens and Dohan 1946), chronic pancreatitis (Sprague 1947), Cushing's syndrome (Becker et al. 1954), alloxan (Mann and Goddard 1948), corticotrophin (Rich 1952), cortisone (Rich et al. 1950), alloxan plus cortisone (Friedenwald 1952), and subtotal pancreatectomy (Foglia et al. 1950) have all been implicated in this way. We are placed in the same difficulty here regarding the vasculopathy as regarding the embryopathy. That is to say, we have a great deal of evidence that both the embryopathy and the vascular disorder are integral and specific parts of the congenital or hereditary syndrome we call "diabetes"; both may develop before hyperglycæmia and do not seem to depend on it. Yet any acquired or artificial cause of long-continued hyperglycæmia seems able to produce the same disorders of pregnancy and of blood-vessels.

Next we may consider why the occasional patient treated with cortisone or corticotrophin becomes diabetic.

TABLE IV—LENGTH OF PREDIABETIC PERIOD

Before diabetes (yr.)	No. of babies	More than 10 lb.	Stillborn
0–4	35	54%	29%
5–9	55	44%	13%
10–14	61	23%	23%
15–19	92	28%	13%
20–29	102	35%	8%
More than 30 ..	43	26%	9·3%
Total	398	33%	14%
Controls ..	439	4·6%	5%

It would seem that this complication occurs only in those who are already predisposed, "prediabetic," or who possess a previously innately insecure carbohydrate metabolism. Thus I found that 6 of 10 such patients at the Massachusetts General Hospital had a family history of diabetes and 2 had a suspiciously prediabetic obstetric history. If we take in other reports (Bookman et al. 1952, Sprague et al. 1950) we find that more than 60% of these corticoid-induced diabetics have a positive family history, enormously above the 1–10% (Joslin et al. 1952) of normal people who have diabetic relatives. Joslin et al. also claim a similar high incidence of diabetes in the families of those acromegalic and hyperthyroid patients who develop diabetes as a complication of these conditions. The same will probably be found true of the "temporary" diabetes of pregnancy, of staphylococcal

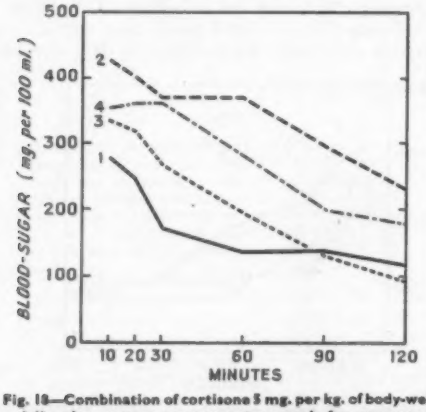

Fig. 18—Combination of cortisone 5 mg. per kg. of body-weight daily plus pregnancy proves too much for pancreas and produces diabetic curve (cf. fig. 15) in pregnant rabbit: (1) before pregnancy; (2) on 15th day; (3) on 20th day, with abortion of three macerated fœtuses; (4) on 25th day.

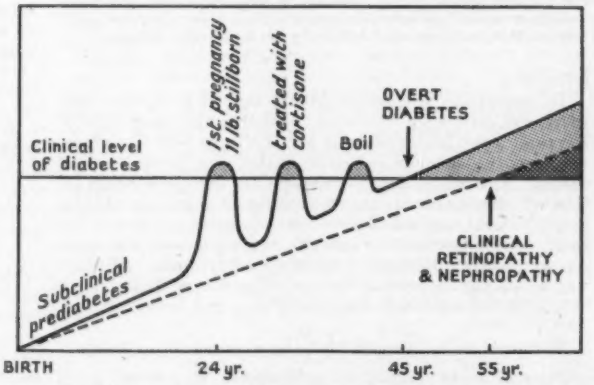

Fig. 19—Author's "iceberg" conception of diabetes: most of it is below the clinical level of overt manifestations, which here include embryopathy at age of 24, transient hyperglycæmia during staphylococcal infection and while on cortisone therapy, and clinically apparent diabetes at age of 45, with retinopathy and nephropathy at age of 55.

infections, and of the diabetes of Cushing's syndrome. In other words, all these diabetogenic states only act as trigger mechanisms to an already inherently partially defective carbohydrate metabolism. They do not produce diabetes in an entirely healthy person.

We are finally led, then, to the conclusion that diabetes dates from birth, that a gradual deterioration takes place with eventual appearance of hyperglycæmia, and that the vascular disease is a specific diabetic entity also occurring in the early years but manifesting itself usually later even than the high blood-sugar level. This is illustrated in fig. 19, which shows that occasionally extra stresses such as we have discussed, occurring in the "prediabetic" years, will bring submerged diabetes to the surface. Prediabetes plus pregnancy thus gives us the embryopathy; prediabetes plus a boil gives us a temporary hyperglycæmia; and so on. Corticoids and pregnancy may also bring to the surface the submerged vascular part of diabetes, most evident as a retinopathy.

Conclusions and Summary

Pregnancy is a dangerous stress to the pancreas.

That it is diabetogenic to the mother is evident from the worsening of the hyperglycæmia and the retinopathy in an established diabetic during pregnancy; from the appearance of retinopathy for the first time during pregnancy, and its disappearance after parturition (Becker 1952, Lawrence 1948); from the occasional appearance of hyperglycæmia and glycosuria in a non-diabetic, which disappears after parturition; from the hypertrophied "pregnancy" pancreas; from the rarity of diabetes in the postmenopausal woman who is childless; and from the potentiation of the diabetogenic effect of cortisone and alloxan in laboratory animals.

That pregnancy is diabetogenic also to the fœtus we have already suggested. The abnormal internal uterine environment of the prediabetic may produce a baby which is stillborn, gigantic, and cushingoid, or a child who grows too tall, has an abnormal vascular system, and develops diabetes.

We do not know the cause of diabetes, nor do we understand its very real relation to growth and size; but apparently diabetes in the latent form ("pre-diabetes") remains with the victim years or decades before he or she becomes overtly diabetic. During this time pregnancy, corticotrophin therapy, acquisition of Cushing's syndrome or of acromegaly, a staphylococcal infection, or overeating, may uncover the individual already predisposed to diabetes. The previously adequately compensating pancreas cannot stand the additional stress completely, and evidence of the latent diabetic state is brought to the surface, divulging its menacing presence by embryopathies or changes in carbohydrate tolerance. Hence it is wrong to talk of diabetes only when glycosuria and hypercalcæmia are present. It is a disorder which goes back much further than that—even into the womb.

I am extremely grateful to the many people with whom I have discussed these ideas and who have given help and encouragement. Among these I would mention particularly Prof. F. Forman, Prof. J. F. Brock, and Prof. G. C. Linder of Cape Town; Prof. Fuller Albright and Prof. Jean Mayer of Boston; Sir Harold Himsworth, Prof. F. G. Young, and Dr. J. H. Sheldon of England; and Prof. J. P. Hoet of Louvain, Belgium. I am further indebted to Professor Hoet for permission to use figs. 5 and 13–18, and to the editor of *Diabetes* for figs. 5 and 15, of the *British Medical Journal* for fig. 2, of the *Journal of Clinical Endocrinology* for figs. 3 and 4, and of the *South African Medical Journal* for fig. 7. Prof. J. T. Louw has kindly allowed unrestricted access to the mothers and babies in his obstetric wards and the use of data concerning them. Prof. J. G. Thomson and Dr. N. Woolf are to be thanked for fig. 13. I am grateful also to Mr. B. Todt for the photographic work, and to the technicians who helped at different stages, especially Miss Dorothy Borcherds, B.SC.

The cost of much of the work was defrayed by grants from the University of Cape Town Staff Research Fund, and the Eli Lilly Research Fellowship enabled me to collect more data and ideas.

ADDENDUM

I have recently seen several even more convincing cases of progression from "prediabetes" to diabetes than are charted in figs. 8–12. Reports of these will be published later.

REFERENCES

Adams, S. F. (1929) *J. Nutr.* **1**, 339.
Bartelheimer, H. (1953) *Klin. Wschr.* **31**, 345.
— Kloos, K. (1952) *Z. ges. exp. Med.* **119**, 246.
Becker, B. (1952) *Ann. intern. Med.* **37**, 273.
— Maengwyn-Davies, G. D., Rosen, D., Friedenwald, J. S., Winter, F. C. (1954) *Diabetes*, **3**, 175.
Best, C. H. (1953) *Ann. intern. Med.* **39**, 433.
Bookman, J. J., Drachman, S. R., Schaefer, L. E., Adlersberg, D. (1952) *J. clin. Endocrin.* **12**, 945.
British Medical Journal (1952) ii, 712.
Colwell, A. R. (1942) *Arch. intern. Med.* **70**, 523.
Conn, J. W. (1945) *Proc. Amer. diabetes Ass.* **5**, 79.
deCosta, E. J., Abelman, M. A. (1952) *Amer. J. Obstet. Gynec.* **64**, 746.
Ditzel, J., White, P., Duckers, J. (1954) *Diabetes*, **3**, 99.
Dry, T. J., Hines, E. A., jun. (1941) *Ann. intern. Med.* **14**, 1895.
Dubreuil, G., Andérodias (1920) *C.R. Soc. Biol., Paris*, **83**, 1490.
Foglia, V. G. (1944) *Ref. Soc. argent. Biol.* **20**, 21.
— Mancini, R. E., Cardeza, A. F. (1950) *Arch. Path.* **50**, 75.
Frawley, T. F. (1953) At the 13th annual meeting of the American Diabetes Association.
Friedenwald, J. S. (1952) *J. Amer. Med. Ass.* **150**, 969.
Gemzell, C. A. (1953) *J. clin. Endocrin.* **13**, 898.
Gilbert, J. A. L. (1949) *Brit. med. J.* i, 702.
Green, D. M., Nelson, J. N., Dodds, G. A., Smalley, R. E. (1950) *J. Amer. med. Ass.* **144**, 439.
Hausberger, F. X., Ramsey, A. J. (1953) *Endocrinology*, **53**, 423.
Hoet, J. P. (1951) *Ann. Endocr., Paris*, **12**, 847.
— Lukens, F. D. (1954) *Diabetes*, **3**, 1.
Hultquist, G. T., Engfeldt, B. (1949) *Acta endocr., Copenhagen*, **3**, 365.
Jackson, W. P. U. (1952) *Brit. med. J.* ii. 690.
— (1953) *S. Afr. med. J.* **27**, 795.
— (1954) *J. clin. Endocrin.* **14**, 177.
John, H. J. (1950) *Amer. J. dig. Dis.* **17**, 219.
Joslin, E. P., Root, H. F., White, P., Marble, A. (1952) The Treatment of Diabetes Mellitus. 9th ed., Philadelphia.
Kritzer, M. D. (1952) *Med. Clin. N. Amer.* **36**, 1151.
Lawrence, R. D. (1948) *Brit. J. Ophthal.* **32**, 461.
Long, C. N. H. (1952) *Lancet*, i, 325.
Lukens, F. D., Dohan, F. C. (1946) *Arch. Path.* **41**, 19.
Lund, C. J., Weese, W. H. (1953) *Amer. J. Obstet. Gynec.* **65**, 815.
Lundbaek, K. (1953) *Acta med. scand.* **145**, suppl. no 277, p. 143.
Mann, G. V., Goddard, J. W. (1948) *J. clin. Invest.* **28**, 797.
Mayer, J., Bates, M. W., Dickie, M. M. (1951) *Science*, **113**, 746.
Miller, H. C. (1945) *Amer. J. med. Sci.* **109**, 447.
Penrose, L. S. (1952) *Ann. Eugen., Lond.* **16**, 378.
Pirart, J. (1954) *Ann. Endocrin.* **15**, 58.
Randle, P. J. (1954) *Lancet*, i, 441.
Rich, A. R. (1952) *Johns Hopk. Hosp.* C.P.C. February.
— Berthrong, M., Bennett, I. L. (1950) *Bull. Johns Hopk. Hosp.* **87**, 549.
Sheldon, J. H. (1949) *Lancet*, ii, 869.
Sprague, R. G. (1947) *Proc. Mayo Clin.* **22**, 553.
— Power, M. H., Mason, H. L., Albert, A., Mathieson, D. R., Hench, P. S., Kendall, E. C., Slocumb, C. H., Polley, H. F. (1950) *Arch. intern. Med.* **85**, 199.
Talbot, N. B., Wood, M. S., Worcester, J., Christo, E., Campbell, A. M., Zygmuntowicz, A. S. (1951) *J. clin. Endocrin.* **11**, 1224.
Van Beek, C. (1952) At 1st International Congress of International Diabetes Federation, and personal communications.
Venning, E. H., Browne, J. S. L. (1947) *J. clin. Endocrin.* **7**, 79.
Wagener, H. P. (1945) *Proc. Amer. Diabetes Ass.* **5**, 201.
Warren, S., LeCompte, P. M. (1952) The Pathology of Diabetes Mellitus. 3rd ed., Philadelphia.
White, P., Koshy, P., Duckers, J. (1953) *Med. Clin. N. Amer.* **37**, 1481.
Young, F. G. (1951) *Brit. med. J.* ii, 1167.
— (1953) *Recent Progr. Hormone Res.* **8**, 471.

"... Among the changes of environment with which every species must cope, are the changes which its own living creates. Forest trees, for example, may flourish so successfully that their own seedlings cannot grow in their shade. 'Smog' provides a parallel exact in character, though not yet so extreme in degree. Other animals, I believe, seldom create lethal conditions for themselves, and when they are in danger of doing so, they can usually move on. But our present way of living alters the world we live in far more radically and far more quickly than it did in any pre-technological era; and this is equally true whether you think of the physical changes which have made Greater London or the organisational ones which have left us dependent on Canada for bread and the Argentine for meat; and unlike our fellow mammals or our nomadic ancestors, we cannot move on."—Sir GEOFFREY VICKERS in *Studies in Communication*, London, 1955; p. 88.

METABOLIC RESPONSE TO TOTAL ADRENALECTOMY AND HYPOPHYSECTOMY

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THE study of metabolic changes after trauma was initiated by Cuthbertson (1932), who demonstrated that injury to a limb was followed by loss of nitrogen and phosphorus. Further work indicated that this loss was associated at first with retention of salt (Wilkinson et al. 1949). The disturbance of metabolism was found to be qualitatively similar in all types of trauma, including operation, and related quantitatively to the severity of injury (Cuthbertson 1942).

Similarity of this initial biochemical response to that induced by the administration of corticotrophin has led to the suggestion that operative trauma stimulates the pituitary-adrenal axis to a greater production of adrenal steroids, which produce the metabolic changes (Moore and Ball 1952). Evidence for an increased secretion of adrenal hormones is suggested by a postoperative rise in the level of corticosteroids in blood and urine (Bayliss 1955). However, the relationship between the adrenal hormones and the tissues they affect is not clear. On the one hand, the adrenal glands may directly control tissue metabolism so that the direction and degree of any biochemical change is proportional at all times to the amount of circulating hormone. On the other hand, local mechanisms in the tissues may be responsible for the metabolic changes, provided there is an adequate supply of adrenal hormones.

This " permissive " rôle of the adrenal cortex, allowing the body to achieve homœostasis, has been discussed by Engel (1951) and Ingle (1951). Their experimental work on adrenalectomised rats may now be repeated in patients who are subjected to total adrenalectomy in the treatment of carcinomatosis. In this paper I describe metabolic studies on such patients, with particular reference to the concept of the " permissive " rôle of the adrenal cortex.

Method of Study

The clinical material comprised eight women with carcinoma of the breast. Metastases were present in seven patients. Two patients were subject to total hypophysectomy, one to total adrenalectomy, and five to total adrenalectomy and oöphorectomy.

Corticotrophin (A.C.T.H.) was administered intramuscularly every 6 hours to patients undergoing hypophysectomy ; and cortisone was injected intramuscularly twice daily to patients undergoing adrenalectomy. In six patients administration of the hormone was started 2–4 days before the operation, and the daily dose was kept constant throughout the study. This scheme of constant dosage, initiated before operation, was essential to the study of postoperative metabolism with an unvarying amount of hormone. The amount of the daily dose was determined by trial on the patients included in this series and on others undergoing adrenalectomy or hypophysectomy without full metabolic study. It was found that corticotrophin 60 mg. daily was adequate therapy for total hypophysectomy, and cortisone 80 mg. daily for total adrenalectomy. A dosage of 60 mg. of cortisone daily was also used, but clinically it seemed to be suboptimal.

All the patients were fed from the diet kitchen. The composition of the weighed diet was calculated from the tables of McCance and Widdowson (1946). Urine was collected in 24-hour samples, and fæces in 3–4 day periods.

Sodium and potassium were measured with a flame photometer, and chloride by the method of Asper et al. (1947).

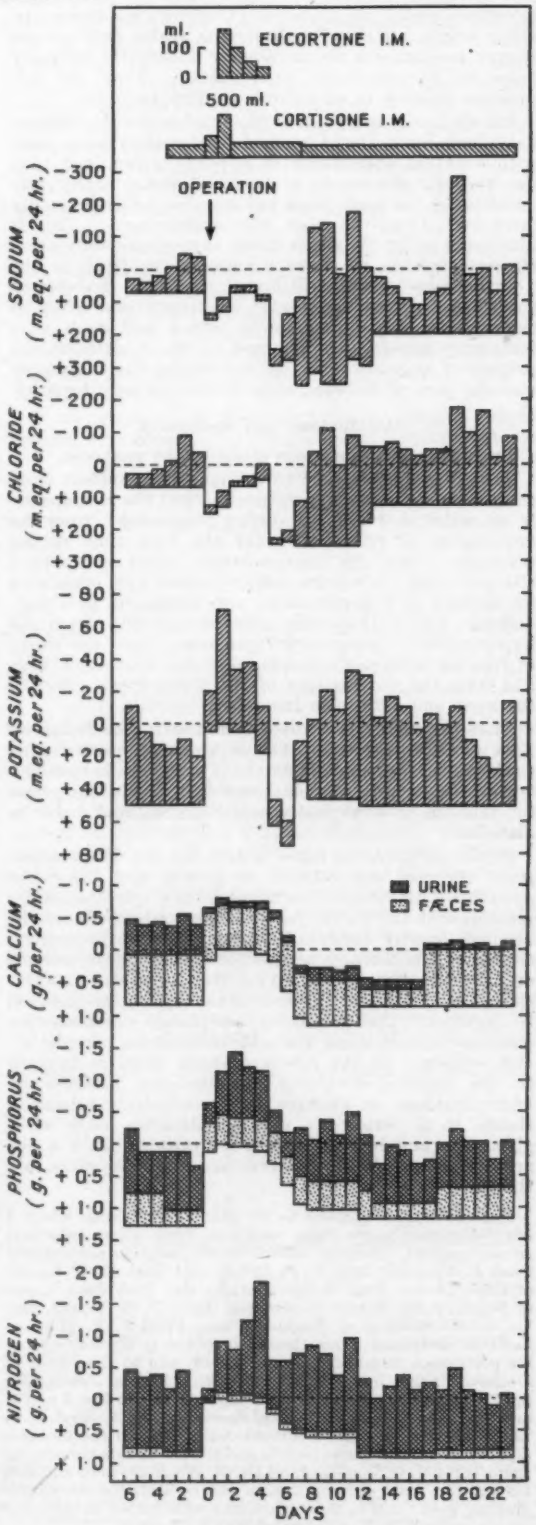

Fig. 1.—Metabolic changes in case 1.

Phosphorus was determined by the method of Fiske and Subbarow (1925), and nitrogen by the micro-Kjeldahl technique. Calcium was measured by oxalate precipitation and determination with standard permanganate. The faecal content of sodium and potassium was not determined. The data obtained were illustrated graphically according to the method of Reifenstein et al. (1945).

Clinical and Biochemical Data

FIRST CASE (fig. 1)

A woman, aged 42, with carcinoma of breast and metastases of spine. General condition fair.

Operation (Mr. J. E. Richardson): total adrenalectomy (without oöphorectomy).

Postoperative course.—Very stormy during the first 4 days. Initial hypotension responded to noradrenaline. Partial collapse of lungs, and later re-expansion.

Hormone therapy.—Intramuscular cortisone 50 mg. twice daily for 3 days before operation, increasing to 150 mg. on day of operation (day 1). On days 2–5 intramuscular 'Eucortone' was given together with 450 mg. of cortisone. Subsequently cortisone was reduced to 150 mg., which was continued until day 8, and then to 100 mg. daily to the end of the study.

Biochemical Data

Sodium chloride.—There was a slight loss of sodium and chloride when cortisone was administered preoperatively. There was considerable salt retention on days 1–8, followed by a loss over days 9–12. Then, after a phase of positive salt balance, there was a further loss. The intake of salt was increased for day 1 and then greatly increased (sodium 300 m.eq. daily) on days 6–13.

Potassium.—Over days 1–4 potassium balance was negative, with maximal loss on day 2 coincident with hæmolysis of transfused blood. There was some retention on days 5–6, followed by some loss.

Nitrogen.—The preoperative balance was negative, but nitrogen loss was considerably above this level on days 1–12. Towards the end of the study the balance had almost achieved equilibrium. The intake of nitrogen was minimal on days 1–6, but during this time the urinary nitrogen excretion was slightly above the preoperative level, and on days 4 and 5 it reached a maximum (15·0 g. daily, compared with 10·7 g. daily before operation) which did not coincide with the largest dosage of cortisone.

Calcium.—Hypercalcuria was present before operation. The urinary calcium returned to normal on day 1 and remained so throughout the rest of the study, the balance becoming positive on day 8. The operation did not produce any recession of the bony metastases, which continued to spread. The negative calcium balance over the immediate period of operation was due to diminished intake, with normal faecal excretion, as would be expected on very sudden restriction of dietary calcium.

Phosphorus.—The immediate postoperative balance was negative, mainly because of low intake and continued faecal excretion, as was the case with calcium. The balance remained negative during the time when the calcium balance was

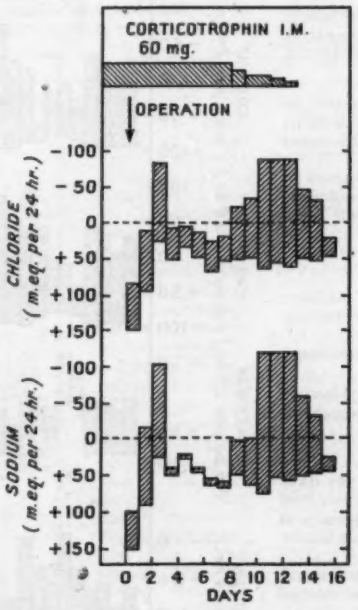

Fig. 2—Metabolic changes in case 2.

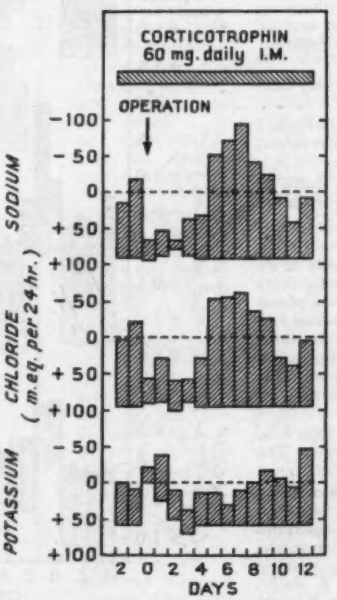

Fig. 3—Metabolic changes in case 3

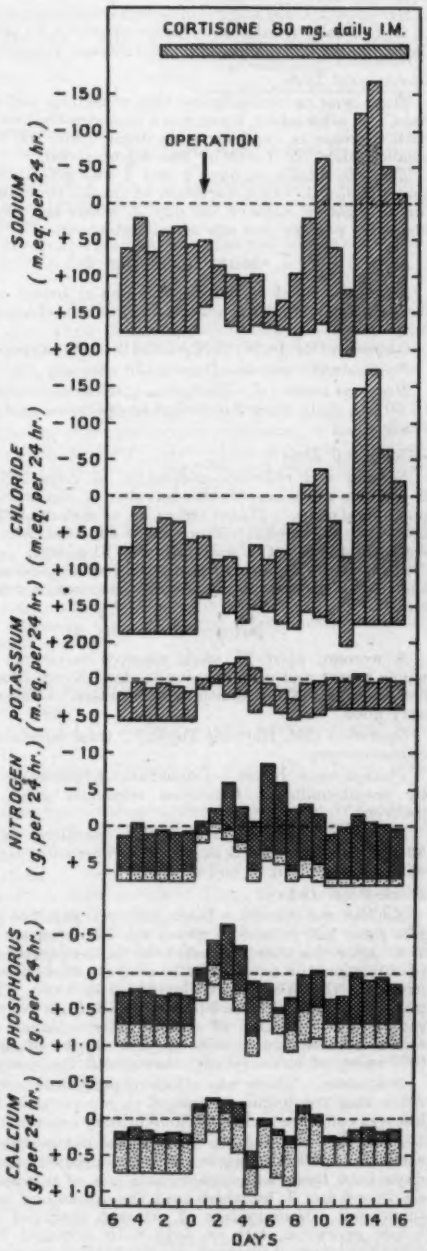
CORTISONE 80 mg. daily I.M.
OPERATION
SODIUM (m.eq. per 24 hr.)
CHLORIDE (m.eq. per 24 hr.)
POTASSIUM (m.eq. per 24 hr.)
NITROGEN (g. per 24 hr.)
PHOSPHORUS (g. per 24 hr.)
CALCIUM (g. per 24 hr.)
DAYS

Fig. 4—Metabolic changes in case 4.

positive because the phosphorus output was reflecting the increased nitrogen loss at this time.

SECOND CASE (fig. 2)

A woman, aged 45, with carcinoma of breast and multiple metastases in bone. General condition poor.

Operation (Mr. D. W. C. Northfield): total hypophysectomy.

Postoperative course.—Despite severe hæmorrhage at operation necessitating large transfusion of blood, the recovery was entirely smooth and without incident. On withdrawal of corticotrophin the patient experienced rapidly increasing lassitude with drowsiness and anorexia. These symptoms were alleviated by cortisone.

Hormone therapy.—Intramuscular corticotrophin 6-hourly to 60 I.U. daily from 2 days before operation to postoperative day 8. Dosage then decreased until therapy stopped on day 12.

Biochemical Data

There was an over-all retention of sodium and chloride on days 1–8, after which there was a considerable loss, coincident with decrease in corticotrophin dosage, but the loss became smaller when the hormone was discontinued.

The salt intake on days 1 and 2 was greatly in excess of that on day 3. This variation of intake probably accounts for a negative balance on day 3, when the over-all postoperative pattern was one of salt retention.

THIRD CASE (fig. 3)

A woman, aged 58, with carcinoma of breast and axillary metastases and multiple metastases in bone. General condition fair.

Operation (Mr. D. W. C. Northfield): total hypophysectomy.

Postoperative course.—Uneventful recovery.

Hormone treatment.—Intramuscular corticotrophin 6-hourly to 60 I.U. daily from 2 days before operation and throughout study.

Biochemical Data

Sodium and chloride.—Retention on days 1–5. On days 6–10 there was a loss of salt equivalent to the amount retained postoperatively. (Total retention of sodium 263 m.eq. and total loss 267 m.eq.). Throughout the study the salt intake was unchanged (daily sodium intake 91 m.eq.).

Potassium.—On days 1 and 2 the balance was negative and the intake decreased. No significant change during rest of study.

FOURTH CASE (fig. 4)

A woman, aged 71, with massive carcinoma infiltrating whole breast and unresponsive to deep X-ray therapy and to testosterone. No evidence of metastases. General condition very good.

Operation (Mr. Hermon Taylor): total adrenalectomy and oöphorectomy.

Postoperative course.—Immediate hypotension controlled by noradrenaline. Condition remained good, uneventful recovery.

Hormone therapy.—Intramuscular cortisone twice daily to 80 mg. daily started 3 days before operation and continued without alteration to end of study.

Biochemical Data

Sodium and chloride.—During the preoperative period there was some salt retention, which was accentuated during days 1–8. After this there was salt loss. In the postoperative phase of retention the average daily amount of sodium retained in excess of the preoperative level was 60 m.eq. In the later phase of negative balance the difference from the preoperative period was –65 m.eq. of sodium daily. Values for chloride followed these figures closely. The intake of salt was high (177 m.eq. of sodium daily) throughout the study.

Potassium.—There was a loss of potassium over days 1–5. After that the balance returned to preoperative levels. The loss was coincident with maximal urinary excretion of nitrogen.

Nitrogen.—The balance was positive before operation, being consistent with the patient's well-nourished state. But on days 1–10 there was considerable loss of nitrogen, maximal on days 6 and 7, by which time the intake had been restored to normal. Urinary loss of nitrogen averaged 5·5 g. daily before operation, but on days 6–10 averaged 9·0 g. daily. After this stage of nitrogen loss the balance once more became positive until the end of the study.

Phosphorus.—A slightly positive balance before operation changed over days 1–4 to negative, corresponding to the initial phase of nitrogen loss. The phosphorus balance was positive again at the stage of further nitrogen loss, but the calcium balance was positive at this time.

Calcium balance was positive before operation and there was no significant change throughout. There was no evidence of bony metastases in this patient.

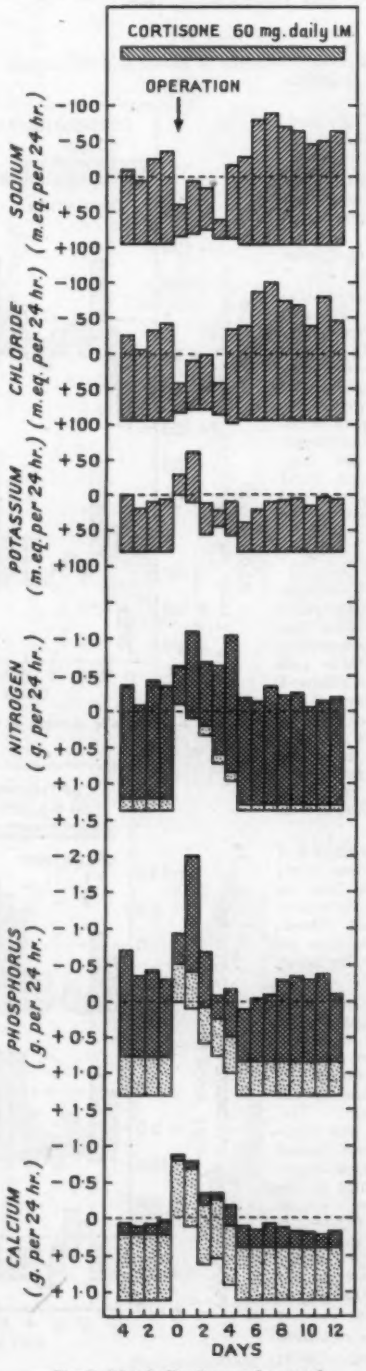
CORTISONE 60 mg. daily I.M.
OPERATION
SODIUM (m.eq. per 24 hr.)
CHLORIDE (m.eq. per 24 hr.)
POTASSIUM (m.eq. per 24 hr.)
NITROGEN (g. per 24 hr.)
PHOSPHORUS (g. per 24 hr.)
CALCIUM (g. per 24 hr.)
4 2 0 2 4 6 8 10 12
DAYS

Fig. 5—Metabolic changes in case 5.

FIFTH CASE (fig. 5)

A woman, aged 58, with carcinoma of left breast and metastases in axillary glands (massive œdema of arm) and multiple bony metastases. General condition fair.

Operation (Mr. Hermon Taylor): total adrenalectomy and oöphorectomy.

Postoperative course.—Uneventful recovery.

Hormone therapy.—Intramuscular cortisone 60 mg. daily (in twice-daily doses) from 4 days before operation and continued throughout study.

Biochemical Data

Sodium and chloride.—There was loss of salt before operation, perhaps associated with some diminution in œdema of arm. On days 1–4 there was retention of salt, the difference from the preoperative balance being +50 m.eq. of sodium daily. On days 5 and 6 equilibrium was established, and after this a steady loss of sodium and chloride, greatest on days 7 and 8. In the first 4 days of salt loss the difference from preoperative levels was –53 m.eq. of sodium daily. Throughout the study the salt intake was kept almost constant, with an average intake of 94 m.eq. of sodium daily.

Potassium.—There was a negative balance on days 1 and 2, when intake was least, but otherwise there was no significant change.

Nitrogen.—The negative preoperative balance was much increased on days 1–5, the nitrogen loss remaining constant despite restoration to normal intake. Urinary excretion of nitrogen exceeded preoperative levels on day 5 only. From day 6 onwards the balance showed a daily loss of 1·6 g., compared with 3 g. daily before operation.

Phosphorus.—Preoperative negative balance reflecting nitrogen loss. On days 1–5 there was an increased loss, but after this the loss decreased when the calcium balance became positive.

Calcium.—Despite metastases in bone there was no hypercalcuria. There was a negative balance on days 1–5, mainly due to diminished intake and continued fæcal excretion. After this a definite positive balance was established.

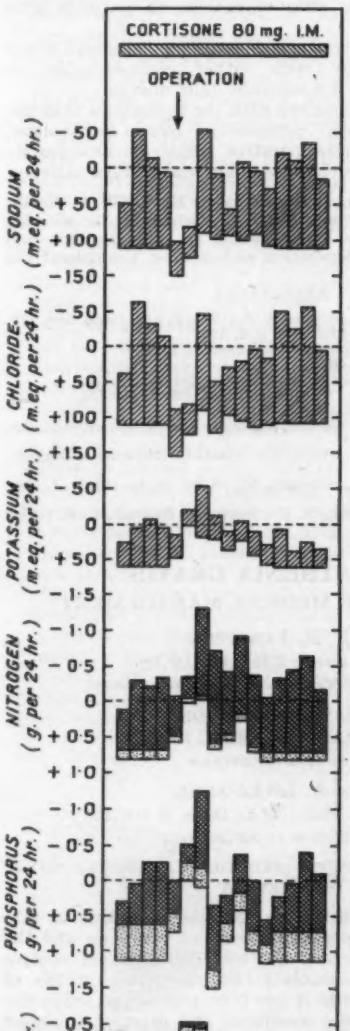
CORTISONE 80 mg. I.M.
OPERATION
SODIUM (m.eq. per 24 hr.)
CHLORIDE (m.eq. per 24 hr.)
POTASSIUM (m.eq. per 24 hr.)
NITROGEN (g. per 24 hr.)
PHOSPHORUS (g. per 24 hr.)
CALCIUM (g. per 24 hr.)
DAYS

Fig. 6—Metabolic changes in case 6.

SIXTH CASE
(fig. 6)

A woman, aged 30, with carcinoma of breast and multiple secondaries in lungs and in scar of mastectomy. General condition poor.

Operation (Mr. E. C. Butler): total adrenalectomy and oöphorectomy.

Postoperative course.—Uneventful recovery.

Hormone therapy.—Intramuscular cortisone 80 mg. daily (in twice-daily doses) started 5 days before operation and continued throughout the study.

Biochemical Data

Sodium and chloride.—Average of postoperative period indicated equilibrium. Over days 1–5 there was an average retention of 40 m.eq. of sodium daily, with an equivalent amount of chloride. There was much retention on days 1 and 2, when salt intake was greatly increased but salt was lost on day 3, associated with considerable diminution in intake. On days 6–8 there was a slight retention of salt followed by loss over days 9–12, the daily average loss for sodium being 12 m.eq. but for chloride 31 m.eq.

Potassium.—The balance became negative on days 2–4, when nitrogen loss was greatest. After that a positive balance was established.

Nitrogen.—The preoperative slight nitrogen loss gave way to a marked loss, especially on days 3–6, when urinary excretion averaged 12·5 g. daily, compared with preoperative average of 8·5 g. daily. Some loss continued until day 10, but equilibrium was established on the last 6 days.

Phosphorus.—After preoperative equilibrium there was a negative balance over days 2–6, but the loss was slight. From day 7 onwards some retention was associated with a positive calcium balance.

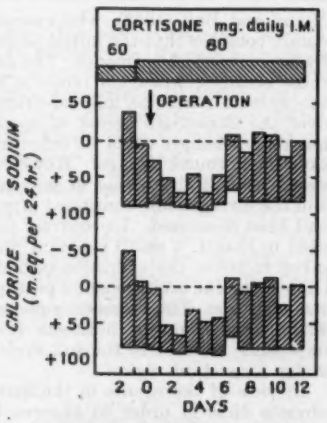

Fig. 7—Metabolic changes in case 7.

Calcium.—Preoperative loss was changed to postoperative gain, starting from day 4.

SEVENTH CASE (fig. 7)

A woman, aged 49, with carcinoma of breast and metastases in spine and pelvis. Partial paraplegia. General condition fair.

Operation (Mr. Hermon Taylor): total adrenalectomy and oöphorectomy.

Postoperative course.—Uneventful recovery.

Hormone therapy.—Intramuscular cortisone (in twice-daily doses) 60 mg. daily, starting 4 days before operation, increased to 80 mg. daily 1 day before operation, and continued at this dose until end of study.

Biochemical Data

On days 1–6 salt was retained, the average daily retention of sodium being 53 m.eq. On days 7–12 both sodium and chloride balances were in approximate equilibrium. The difference in average daily sodium balance was –49 m.eq., compared with the first 6 days after operation. The intake of salt was constant throughout the study (sodium intake 85 m.eq. daily).

EIGHTH CASE

A woman, aged 40, with carcinoma of breast and multiple metastases in bone.

Operation (Mr. E. C. Butler): total adrenalectomy and oöphorectomy.

Postoperative course.—Uneventful recovery. Bone pain continued.

Hormone therapy.—Intramuscular cortisone (in twice-daily doses) 80 mg. daily, starting 3 days before operation and continued throughout the study.

Biochemical Data

Nitrogen.—On a daily intake of 7·5 g. the average urinary excretion of nitrogen was 9 g. daily. On days 1 and 2 the intake was increased, but from day 3 the intake was rapidly brought up to preoperative levels. The greatest amount of nitrogen was lost on days 1 and 2; but, when the intake was increased, the urinary nitrogen was considerably above preoperative levels, averaging 14·5 g. on days 2–6.

Calcium.—In association with osteolytic metastases there was a preoperative hypercalcuria. This continued at the same level after operation. There was no evidence of any regression of the tumour after the operation.

Discussion

The metabolic changes which have been described as following operations pass through two phases: initially there is salt retention, some potassium loss, and a negative nitrogen balance, despite adequate protein intake; but in the second phase salt is lost and the nitrogen balance returns to equilibrium, followed by nitrogen retention.

Moore and Ball (1952), who examined these changes in detail, consider that the initial phase at least is regulated by adrenocortical hormones. The data in case 1 illustrate these changes, when, on removal of the adrenals, large amounts of cortisone and eucortone were administered over the immediate period of operation. Therefore the metabolic changes could be reflecting directly the alterations in hormone dosage. However, salt retention persisted beyond the period of maximal hormone therapy, and the nitrogen loss continued after the dose of cortisone had been decreased. In contrast to the massive therapy used in case 1, a small constant dosage of hormone was given to cover the operation period in case 2 with good clinical results, and the usual postoperative salt retention was observed. The succeeding phase of salt loss coincided with a reduction of hormone dosage; hence it was impossible to observe the full cycle of metabolic change under a constant régime.

In view of the results in the first two cases it became obvious that in order to observe the body's metabolic changes in response to trauma, under conditions of constant hormone dosage, it was essential to start the régime 2–3 days before removal of the endogenous source of hormone, and to keep the dosage constant throughout the study. Satisfactory schemes of dosage were formulated as follows: for total hypophysectomy intramuscular corticotrophin 60 mg. daily in 6-hourly doses, and for total adrenalectomy intramuscular cortisone 60–80 mg. daily in twice-daily doses were found to be adequate as therapy throughout the whole period of the study. It must be emphasised that this régime was designed for the particular circumstances of these operations, and it is not implied that this would be a correct dosage in all circumstances.

The electrolyte balance in case 3 indicates that the initial phase of postoperative salt retention and subsequent salt loss can occur in the absence of the pituitary gland when the adrenal glands are exposed to a constant dosage of corticotrophin. Similar biphasic changes in salt balance were observed in the other cases. The degree of change appeared to be related to the salt intake and the amount of hormone present. Sudden variations in salt intake produced corresponding changes in salt balance, as in case 6, when a large increase in intake on days 1 and 2 was followed by a relatively small intake on day 3. As a result the positive balance of the first 2 days gave way to a negative balance on day 3. This delay in the kidney's response to alterations in salt loss is observed in the normal subject.

Changes in nitrogen balance, reflected also in the phosphorus balance, followed the recognised pattern in patients with intact adrenals, undergoing surgery. The nitrogen loss following operation is more obvious if the patient has been well nourished before operation, as in case 4, when a preoperative nitrogen retention gave way to considerable postoperative loss and finally to equilibrium. The effect of restoring protein intake early after operation does not alter the negative balance, the urinary nitrogen excretion being above the preoperative level (case 8).

The data obtained from these patients indicate that the postoperative metabolic response is essentially normal despite the constant hormone dosage. This does not in any way invalidate the evidence for changes in pituitary-adrenal function obtained on normal patients undergoing surgery, but it does show that alterations in metabolism are not directly related to variations in the amount of circulating adrenal corticoids. It appears that the body possesses mechanisms which will produce a certain biochemical response to trauma, provided a sufficient but constant supply of corticoids is available.

From the practical standpoint, when the normal pituitary gland or the adrenal glands are removed, massive doses of adrenal steroids are unnecessary; nor need the daily dose be varied. Cortisone alone proved a satisfactory cover for adrenalectomy, provided it was administered regularly for 2–3 days before operation. Similarly, corticotrophin in constant dosage, started preoperatively, provides a satisfactory cover for total hypophysectomy. There is no need for an increased salt intake over the immediate period of operation. A constant intake is preferable, in amounts similar to those in a normal diet—i.e., 6–8 g. of sodium chloride daily.

Summary

The metabolism of patients undergoing total hypophysectomy or adrenalectomy in the treatment of carcinomatosis was studied.

The metabolic response after these operations is similar to that seen after operations on patients with intact adrenals.

A normal postoperative response was obtained when substitution therapy with either corticotrophin or cortisone was given at a constant daily dosage.

The results are consistent with the hypothesis that the adrenal cortex plays a " permissive " rôle in metabolism, and indicate that postoperative metabolic changes do not depend solely on changes in adrenal cortical activity.

I wish to thank Mr. Hermon Taylor, Mr. D. W. C. Northfield, Mr. E. C. Butler, and Mr. J. R. Richardson for allowing me to conduct these investigations on their patients and for their unfailing coöperation and interest throughout the study

REFERENCES

Asper, S. J., Schales, O., Schales, S. J. (1947) *J. biol. Chem.* **168**, 779.
Bayliss, R. I. S. (1955) *Brit. med. J.* i, 495.
Cuthbertson, D. P. (1932) *Quart. J. Med.* **1**, 233.
— (1942) *Lancet*, i, 433.
Engel, F. L. (1951) *Recent Progr. Hormone Res.* **6**, 277.
Fiske, C. H., Subbarow, Y. (1925) *J. biol. Chem.* **66**, 375.
Ingle, D. J. (1951) *J. Endocrin.* **8**, xxiii.
McCance, R. A., Widdowson, E. M. (1946) *Spec. Rep. Ser. med. Res. Coun., Lond.* no. 235.
Moore, F. D., Ball, M. R. (1952) The Metabolic Response to Surgery. Springfield, Ill.
Reifenstein, E. C. jun., Albright, F., Wells, S. L. (1945) *J. clin. Endocrin.* **5**, 367.
Wilkinson, A. W., Billing, B. H., Nagy, G., Stewart, C. P. (1949) *Lancet*, i, 640.

MYASTHENIA GRAVIS

RESULTS OF MEDICAL MANAGEMENT

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Myasthenia gravis is, by general standards, a rare disease; but the special problems of diagnosis and the hazards of management are such that certain centres have tended to accumulate relatively large groups of cases. At such centres it has been possible to study the natural history of the condition, and attempt to assess the possible benefits of various forms of treatment. From these studies there has now emerged the crucial question of the place and value of thymectomy.

It might appear a simple matter to give a definitive opinion on the results of operative treatment, but assessment of the clinical evolution of the disease is attended by considerable difficulties. Kennedy and Moersch (1937) in reviewing 87 cases, followed for an average of four years, at a time when neostigmine was not available and

thymectomy not practised, noted complete spontaneous remissions in 27 patients. These remissions ranged in duration from one month to fifteen years with an average of 2·2 years. These figures are indeed impressive, and Harvey (1948) was led to conclude that treatment with neostigmine actually reduced the frequency and the duration of spontaneous remissions. Clearly very careful observation and analysis is required in evaluating any form of treatment.

Conscious of these difficulties, Eaton and Clagett (1950) attempted a statistical comparison of the results of surgical and medical treatment of 211 cases seen at the Mayo Clinic. From these 211 cases, they selected 56 medical and 62 surgical cases of which it could be said that age, duration, severity, and course before treatment made them truly comparable. After excluding immediate postoperative deaths they concluded that there was no indication that thymectomy influenced beneficially the course of myasthenia gravis. Grob (1953) in contrasting the results of thymectomy in 44 cases with those of irradiation in 40 and medical treatment in 118 arrived at a similar conclusion. More recently, however, Eaton et al. (1952) reviewed the results in 374 patients and concluded that there is clinical evidence of a relationship between the thymus and myasthenia gravis. This reversal of their earlier view is modified to some extent by their expressed doubts as to the efficacy of removal of the thymus, and they suggest that "it is possible that the operation itself stimulates certain endocrine metabolic processes within the patient that account for the (statistically) favourable results of thymectomy." They add that their statistical adviser refuses to concede that their figures prove beyond doubt the value of thymectomy.

In this country Keynes (1949), with an extensive personal experience, has emerged as the chief advocate of operative treatment; and comparison of the results of thymectomy in 100 of Keynes's series with the recorded results of three medically treated groups—Kennedy and Moersch (1937), Boothby (1936), and Eaton et al. (1949)—led Ross (1952) to conclude that thymectomy was undoubtedly beneficial. It must be recalled, however, that the two earlier groups which he cites did not have the benefit of neostigmine in their treatment.

In 1954 Keynes reviewed the existing evidence upon the subject and in so doing remarked that "no physician in this country has ever recorded the results in a series of medically treated patients at all comparable with the unusually extensive series that has now been submitted to surgery." It so happens that of the 85 cases of myasthenia seen in the neurological clinic at the Manchester Royal Infirmary during the past twenty-two years, only 10 were submitted to surgery; so there is a group of 75 cases under medical treatment available for comparison. Strict scientific comparison with a larger surgical series cannot be made, but this particular group, followed for an average period of more than ten years, indicates what can be expected from a conservative policy.

Observations on the Series

The General Picture (table I)

These 85 cases were seen during the period 1932–54, though no case of less than two years' standing in the clinic is included. Medical treatment comprised the administration of the optimal dose of neostigmine with the occasional addition of ephedrine, guanidine, and potassium chloride. More recently pyridostigmine has been used in a small number of patients and has been found of very definite use in two circumstances:

1. In the rare instances of neostigmine intolerance, treatment could be maintained with pyridostigmine, which is less productive of intestinal colic.
2. Pyridostigmine, with its prolonged action, has been of value in controlling the early-morning weakness which may be so troublesome in patients with generalised weakness.

TABLE I—THE SERIES OF 85 CASES

Operated	10
Untraced	6
Dead	9
Surviving	60
Follow-up period:	
Maximum 22 years.	
Minimum 2 years.	

Of the 75 medically treated cases, 60 survivors were re-examined in 1954, 6 could not be traced, and 9 were dead.

49 of the cases were female and 26 male. The average age at onset was 34 years, but the range was from the first day of life to 71 years. The age-distribution curve indicates a maximal incidence in the second, third, and fourth decades.

Deaths and Survival Periods

Table II gives the causes of death in the fatal cases. The duration of their illnesses ranged up to sixteen years. 3 of the patients died of independent disorders, 3 died of definite myasthenic affection, 2 had thymomata, and in 1 case we have been unable to secure information on the mode of death.

Ocular Myasthenia

It has long been recognised that myasthenia may restrict itself to the ocular muscles, and Grob (1953)

Fig. 1—Course of illness in 44 cases presenting with only ocular signs of myasthenia.

Stippled = remained ocular only (27).

Hatched = generalised in three to thirteen years (7).

Black = generalised early (10).

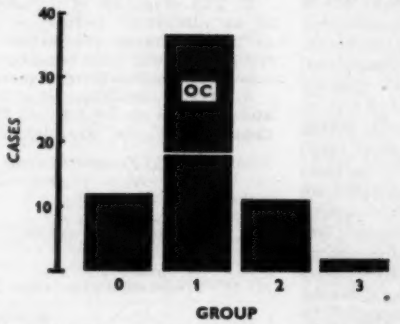

Fig. 2—Functional state of 60 medically treated survivors.

Group 0. Complete remission (12).
Group 1. Minimal symptoms (17).
Group 1 (oc.). Ocular myasthenia (18).
Group 2. Moderate disability helped by neostigmine (11).
Group 3. Critical condition despite neostigmine (2).

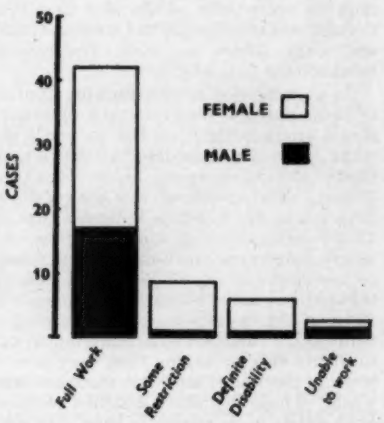

Fig. 3—Capacity for work in 60 medically treated survivors.

has drawn attention to the need to segregate the ocular group for purposes of assessment. This is done by Eaton et al. (1952); but Keynes's figures do not seem to take this factor into account, for the functional grading by Ross includes no reference to it.

In 44 of our 75 cases the onset was signalled by ocular symptoms only (fig. 1). In 27 of these the disorder has remained confined to the ocular muscles, and only 1 of these patients has died—of carcinoma of the tongue at 71. Grob took the view that, when the ocular form persists for more than two years, extension to the generalised

TABLE II—CAUSE OF DEATH IN 9 CASES

Age	Duration of myasthenia at death (years)	Cause
72	2	Carcinoma of tongue
40	11	Carcinoma of breast
68	16	Gastric neoplasm
38	3	Thymomata
44	2	
40	10	No trace
32	3	Myasthenia
40	7	Myasthenia
71	3½	Myasthenia

form is unlikely. But in 7 of our cases a picture primarily ocular extended to other muscles after intervals ranging from three to thirteen years from the first symptoms. Our remaining 10 patients with ocular onset developed signs of generalisation within the two-year limit mentioned by Grob. Comparable survival figures for thymectomised patients in whom the disorder was ocular in type are not available.

It seems to us that, in assessing clinical progress, patients with this benign ocular myasthenia—in which any method of treatment will give good results—should always be separated from patients with the generalised type. There is, unfortunately, no clinical means of differentiating the purely ocular from the remainder.

Present Functional Status of the Survivors

39 of the survivors are women and 21 men. The average follow-up to date has been 9·0 years for the men and 10·2 years for the women, and the longest duration 22 years.

The difficulties of assessing function are well recognised: in particular the grading of function or remission according to changes in neostigmine dosage is far from satisfactory. No system is likely to be perfect, but the one employed by Eaton et al. (1952) is perhaps of the greatest practical value. Its application to our series is shown in fig. 2, from which it will be seen that 47 of the 60 survivors are in group 1 or above. This classification requires acceptance of the idea that ocular myasthenia, though locally severe, is not a serious functional handicap, and that ptosis or even diplopia do not gravely incapacitate patients.

As an extension of this working approach to the status of these patients we drew up a different system of functional grading based on the patient's ability to perform what he or she considered to be normal work, and we made this assessment independently of neostigmine dosage. The results of this pragmatic classification are depicted in fig. 3, which indicates that 42 of the original 75 are performing full work. For the women this implies active housework including washing and spring-cleaning or occupations in offices or as school-teachers. The occupations followed by the 17 men in full work include those of foundryman and police inspector. The 8 women who regard themselves as suffering from some restriction illustrate this by saying that they need help with heavy work in the home, and that their husbands wring out the wash. Those definitely disabled require help for household duties more energetic than dusting, though cooking is within their range of action.

TABLE III—REMISSIONS IN MEDICALLY TREATED PATIENTS

—	Present series	Kennedy and Moersch
Total no. of patients	75	87
Patients remitting	32	27
Total remissions	81	43
Average sum of duration of remissions	4·9 yr.	2·1 yr.

The man who is definitely disabled is aged 75, and also has severe bronchitis. One of the two men unable to work is 64 and also belongs to the thymoma group, whilst the other has now suffered from myasthenia for seventeen years. This man was at full work as a market gardener until four years ago.

Remissions

Harvey (1948) held that administration of neostigmine reduced both the frequency and the duration of spontaneous remissions. The figures for our series of neostigmine-treated cases can be compared with those of Kennedy and Moersch (1937) in which neostigmine was not given. (Only *complete* remissions exceeding a month in duration are included, because the assessment of partial remissions is attended by many difficulties and depends largely on the subjective observations of the patients.) Table III shows that in our neostigmine-treated series a larger proportion of the patients had remissions and their remissions were more frequent and lasted longer than those in Kennedy and Moersch's series. It thus gives no support to Harvey's contention. It seems clear that neostigmine affects adversely neither the rate nor the duration of remissions.

Cases undergoing Thymectomy

No conclusions can be drawn from the small series of 10 cases treated surgically, and the details given in table IV are included only to complete the picture. 6 of these patients are dead, and the manner of their death was myasthenic with either respiratory crises or sudden syncope. The functional grading of the remaining 4 is on the Eaton scale.

Conclusions

We are not attempting to compare the results of thymectomy and of medical treatment; for our data are insufficient for such a comparison. We believe, however, that the following conclusions are permissible:

1. Although 9 of our 85 patients have died, and a further 6 have not been traced, the survival of 60, of whom 42 are in full work, suggests that the adjective gravis is not applicable to all cases of myasthenia.

2. The diagnosis of myasthenia need not be regarded as an automatic indication for thymectomy as a life-saving or urgent procedure. A period of observation, with treatment with neostigmine, may indeed prove the correct and safest form of management for many patients.

3. If the condition is initially ocular in distribution and remains so for two or three years, there is a good chance that the disorder will remain local and will

TABLE IV—10 CASES TREATED BY THYMECTOMY (4 ALIVE, 6 DEAD)

Sex	Age	Duration of myasthenia (years)		Outcome
		Before operation	After operation	
M	42	18	8	Died of myasthenia
M	18	1	1½	,, ,, ,,
F	24	2	4	,, ,, ,,
F	41	2	3	,, ,, ,,
F	24	2	0	,, ,, ,,
F	24	1	0	Enema produced fatal myasthenic crisis
F	30	2	4½	Alive: functional group 1
F	31	1	10	,, ,, ,, 2
F	41	1	11	,, ,, ,, 3
M	45	2½	7	,, ,, ,, 0

produce little or no disability. In such cases thymectomy may not be justified.

4. A decision to advise thymectomy may be made if the condition is generalised at an early stage and cannot be controlled adequately with neostigmine. The extension of the ocular form to the generalised type might also appear to be an indication for operative treatment.

Pyridostigmine ('Mestinon') was supplied to us by Roche Products Ltd.

REFERENCES

Boothby, W. H. (1936) *Trans. Ass. Amer. Phycns*, **51**, 188.
Eaton, L. M., Clagett, O. T. (1950) *J. Amer. med. Ass.* **142**, 963.
— — Bastrow, J. A. (1952) *Res. Publ. Ass. nerv. ment. Dis.* **32**, 107.
— — Good, C. A., McDonald, J. R. (1949) *Arch. Neurol. Psychiat.* **61**, 467.
Grob, D. (1953) *J. Amer. med. Ass.* **153**, 529.
Harvey, A. M. (1948) *Bull. N.Y. Acad. Med.* **24**, 505.
Kennedy, F. S., Moersch, F. P. (1937) *J. Canad. med. Ass.* **37**, 216.
Keynes, G. (1949) *Brit. med. J.* ii, 611.
— (1954) *Lancet*, i, 1197.
Ross, R. T. (1952) *Ibid*, i, 785.

THE GASTRIC MUCOSA IN IRON-DEFICIENCY ANÆMIA

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THE association of achlorhydria and iron-deficiency anæmia has long been known (Witts 1930). Faber (1927) considered that achlorhydria was the result of inflammation in the mucosa which, if sufficiently severe, could cause glandular atrophy. Failure of hydrochloric acid secretion, however, was shown to develop before the stage of atrophy. These facts, and also the well-known gastric atrophy of pernicious anæmia, suggest that the gastric mucosa in iron-deficiency anæmia may be abnormal.

Histological study of the gastric mucosa on a large scale during life had to await the development of the flexible vacuum biopsy tube by Wood et al. (1949). Mainly as a result of their studies, and those of Palmer (1954), much information has been obtained about the state of the gastric mucosa in pernicious anæmia and in chronic gastritis. Little is known, however, about changes in the gastric mucosa in iron-deficiency anæmia. Badenoch and Richards (1953) found gastritic changes in 4 patients with iron-deficiency anæmia and achlorhydria, and Badenoch (1954) reported briefly 24 cases of hypochromic anæmia, all with achlorhydria. These workers found a variable picture: 6 patients showed gross mucosal atrophy, and in 1 the changes were indistinguishable from those found in pernicious anæmia.

The present investigation was designed primarily to study the histology of the gastric mucosa in patients with iron-deficiency anæmia and to determine whether or not any changes which might be present were restricted to patients with achlorhydria. To assess the significance of the findings it was considered necessary to study controls. It was also hoped to provide at least a partial answer to the problem of whether achlorhydria precedes the development of iron-deficiency anæmia or follows it.

Methods

The investigation included 42 patients with iron-deficiency anæmia. In 18 of these there was known to have been some loss of blood (menorrhagia 15, melæna 1, recurrent hæmoptysis 1, carcinoma of œsophagus 1). 31 controls were selected from inpatients with miscellaneous disorders other than alimentary disorders or anæmia. In view of the influence of age on gastric secretion, patients were selected for the control group so as to match approximately the age-distribution of the iron-deficiency anæmia group. They agreed to the procedure in the interests of the investigation.

The resting gastric juice was withdrawn from the patients, who had been fasting overnight. By the method of Kay (1953) mepyramine maleate 200 mg. was injected intramuscularly, and half an hour later histamine 2 mg. was injected subcutaneously. Subsequently samples of gastric juice were withdrawn over a period of one and a half hours at fifteen-minute intervals. After removal of the last sample the patient was given an amethocaine lozenge to suck, and a Wood's biopsy tube was passed into the stomach. A fragment of mucosa was removed, fixed, and stained with hæmatoxylin and eosin. X-ray screening of the patients during the procedure proved unnecessary.

Results

The histological appearances of the biopsy specimens indicated that the gastric mucosa in both groups of patients could be conveniently classified in the following categories, as described by Doig and Wood (1952):

(1) *Normal Mucosa* (fig. 1)

The following criteria constitute a normal mucosa for the purpose of this paper: (*a*) the surface epithelium and foveolæ consist of tall columnar epithelium, and the lamina propria is scanty; (*b*) the tubules of the glands are long, regular, and closely packed with well-staining cells; (*c*) the muscularis mucosa is thin and regular, with no fibrous strands extending into the mucosa; (*d*) no infiltration of acute or chronic inflammatory cells is present in the lamina propria or between the tubules of the glands, but small inflammatory foci at the necks of the glands, consisting of three or four polymorphs only and not more than two per section, are accepted as normal, provided that the other criteria are fulfilled. If there were more than that number of inflammatory foci, the specimen was placed in the following category of superficial gastritis.

(2) *Superficial Gastritis* (figs. 2 and 3)

This group includes the types classified as acute gastritis and chronic degenerative gastritis by Palmer (1954). This class is distinguished by the infiltration of acute or chronic inflammatory cells into the superficial layer of the mucosa with the result that the lamina propria may be distended by inflammatory cells. The surface epithelium is often shortened and atypical and may very occasionally show small areas of intestinal metaplasia. There may be an absence of any glandular atrophy, but usually there is slight atrophy. If the degree of atrophy exceeded about 20% of the glandular tissue, the specimen was not classified in this group but was placed in the following class of atrophic gastritis.

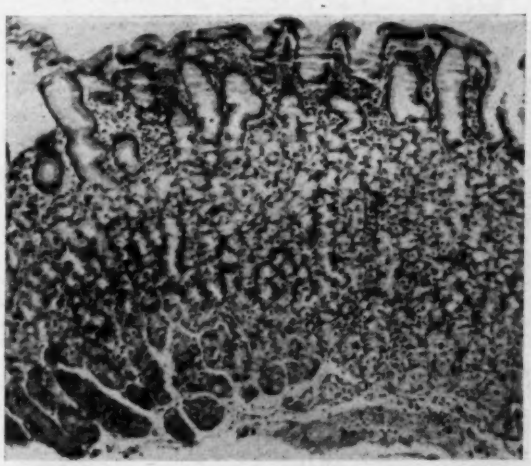

Fig. 1—Normal gastric mucosa in iron-deficiency anæmia: surface epithelium is tall; lamina propria of foveolar layer is scanty and devoid of cellular infiltration; tubules of glands are packed close together with no separation by cellular infiltration. (Hæmatoxylin and eosin. ×90.)

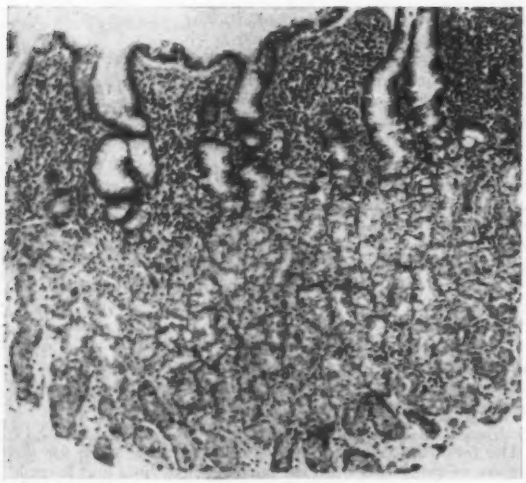

Fig. 2—Superficial gastritis in iron-deficiency anæmia: lamina propria of foveolar layer is distended by inflammatory cells which, however, have not spread down to muscularis mucosa. (Hæmatoxylin and eosin. ×90.)

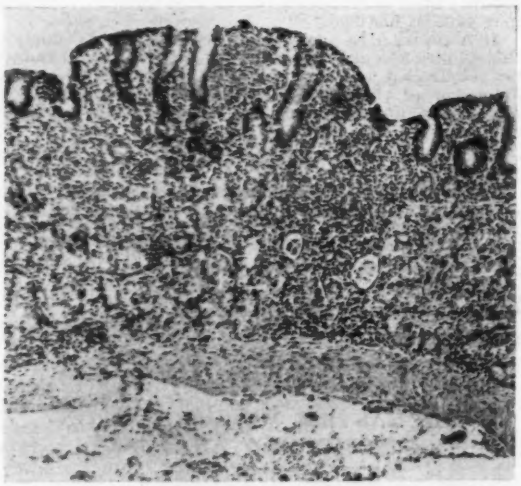

Fig. 3—Advanced superficial gastritis in iron-deficiency anæmia: inflammation still fairly superficial, but a broad band is extending down to muscularis mucosa with some atrophy of glandular tissue. (Hæmatoxylin and eosin. ×90.)

(3) *Atrophic Gastritis* (fig. 4)

In this group the inflammation is usually chronic with sometimes some acute foci in the more superficial part of the mucosa. The inflammation, unlike the previous group, spreads down to the muscularis mucosa with the result that the tubules of the glands may be widely separated. Severe atrophy of the glands is common, but may be patchy. Intestinal metaplasia, with numerous Paneth cells, is often present and may be very widespread; usually, however, it is present in small areas only. The muscularis mucosa is often thickened and irregular owing to hyperplasia and fibrosis. Any lymphoid foci present are greatly enlarged and hyperplastic.

(4) *Gastric atrophy* (figs. 5 and 6)

The atrophy in this group is like that in advanced cases of the previous category, and very little glandular tissue is present. Inflammation of the previous type, however, is absent or minimal, there being only a slight lymphocyte infiltration between the glandular remnants. Intestinal metaplasia may be absent but more commonly is widespread and may affect all the surviving glands throughout the biopsy specimen. Fibrous strands and areas of fibrosis are common, extending from the thickened muscularis mucosa and sometimes surrounding remnants of the glands.

In the last three groups there were inevitably some borderline cases having an intermediate type of histological appearance which caused difficulty in classification. In particular, difficulty was sometimes experienced in distinguishing between atrophic gastritis and gastric atrophy in sections which showed advanced atrophy and slight inflammation. Such sections were classified as gastric atrophy.

Table I shows that the age-distribution of the two groups is roughly comparable, there being a slightly greater proportion of elderly patients in the controls.

Details of the histological findings are shown in table II. Only 26% of patients with iron-deficiency anæmia had normal mucosa, compared with 71% of the controls.

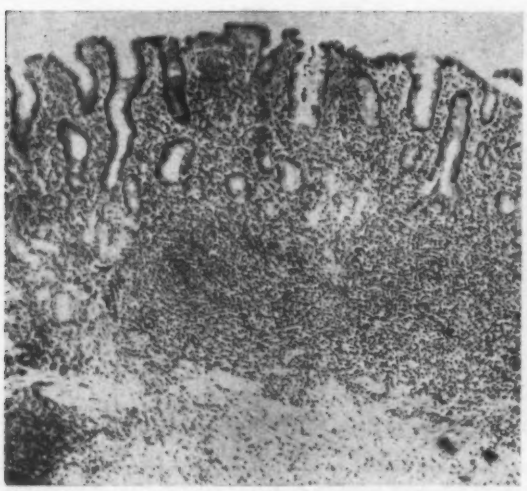

Fig. 4—Atrophic gastritis in iron-deficiency anæmia: extensive inflammation in all layers; severe atrophy of glands; and some thickening of muscularis mucosa. (Hæmatoxylin and eosin. ×90.)

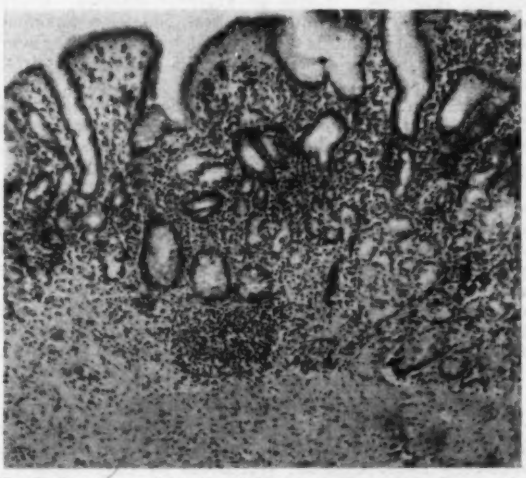

Fig. 5—Gastric atrophy in iron-deficiency anæmia: extensive atrophy of glands, with fibrous tissue growing upwards from greatly thickened muscularis mucosa; a small area of intestinal metaplasia is present in centre of field with a little cellular infiltration around it. (Hæmatoxylin and eosin. ×90.)

TABLE I—AGE-INCIDENCE

Age (yr.)	No. of patients (%)	
	Iron-deficiency anæmia (42 cases)	Control (31 cases)
20–29	17	13
30–39	24	10
40–49	36	23
50–59	12	25
60–69	2	19
70 or more	9	10

Superficial gastritis was found in 31% of patients with iron-deficiency anæmia, and atrophic gastritis in 33%, the figures for the controls being 6% and 10% respectively. The incidence of gastric atrophy was 10% in the iron-deficiency anæmia group and 13% in the control group. The degree of atrophy varied, and it was seen in an extreme form in 5 cases of iron-deficiency anæmia and in 2 of the controls. In these cases the histological appearances were identical with those considered to be characteristic of pernicious anæmia.

Relationship of Histology of Gastric Mucosa to Achlorhydria

Table III shows that histamine-fast achlorhydria was found in 48% of patients with iron-deficiency anæmia and in 13% of the controls. Table IV shows the relationship of the mucosal histology to achlorhydria.

Of the patients with iron-deficiency anæmia, only 1 (5%) with achlorhydria had normal mucosa whereas 50% of those in whom free hydrochloric acid was present had normal mucosa. Superficial gastritis was found in 32%

TABLE II—HISTOLOGY OF GASTRIC MUCOSA IN IRON-DEFICIENCY ANÆMIA AND CONTROLS

Classification	Iron-deficiency anæmia (42 cases)	Controls (31 cases)
Normal mucosa ..	26%	71%
Superficial gastritis ..	31%	6%
Atrophic gastritis ..	33%	10%
Gastric atrophy ..	10%	13%

of patients with free hydrochloric acid, and in 25% with achlorhydria; atrophic gastritis was found in 14% of patients with free hydrochloric acid and in 55% with achlorhydria. Gastric atrophy was present in 4% of patients with free hydrochloric acid and in 15% with achlorhydria. Thus, although the mucosa was often abnormal in the presence of free hydrochloric acid, it was almost invariably abnormal when histamine-fast

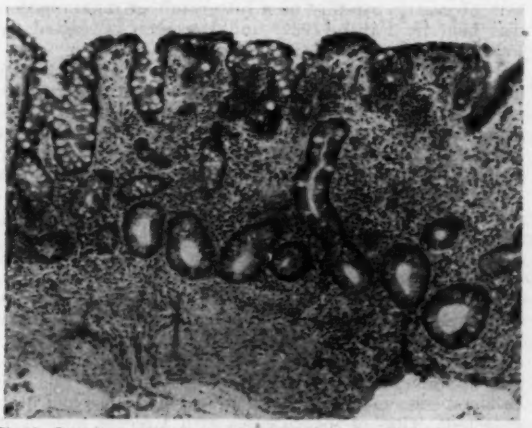

Fig. 6—Gastric atrophy in healthy control with achlorhydria but no anæmia: severe atrophy with almost complete intestinal metaplasia. (Hæmatoxylin and eosin. ×90.)

achlorhydria was present. The main reason for the difference was the greatly increased incidence of atrophic gastritis in the achlorhydric group.

Of the controls 82% of patients with free hydrochloric acid had normal mucosa, the remainder showing changes of superficial or atrophic gastritis. All four biopsy specimens from the patients with achlorhydria showed gastric atrophy.

Table v summarises the biopsy findings in the patients in whom achlorhydria was absent. Fully 50% of patients with iron-deficiency anæmia without achlorhydria had

TABLE III—INCIDENCE OF ACHLORHYDRIA IN IRON-DEFICIENCY ANÆMIA PATIENTS AND IN CONTROLS

Iron-deficiency anæmia (42 cases)		Controls (31 cases)	
Free HCl	Achlorhydria	Free HCl	Achlorhydria
52%	48%	87%	13%

TABLE IV—HISTOLOGY OF GASTRIC MUCOSA IN RELATION TO PRESENCE OR ABSENCE OF FREE HCL

	Iron-deficiency anæmia		Controls	
	Free HCl	Achlorhydria	Free HCl	Achlorhydria
Normal mucosa ..	50%	5%	82%	0
Superficial gastritis	32%	25%	7%	0
Atrophic gastritis	14%	55%	11%	0
Gastric atrophy ..	4%	15%	0	100%

abnormal mucosa, compared with 18% of non-achlorhydric controls.

Thus the incidence of mucosal abnormalities was significantly higher in the iron-deficiency anæmia group than in the controls; the changes were most frequent and severe in the presence of achlorhydria but were also found in half the patients in whom free hydrochloric acid was present.

TABLE V—INCIDENCE OF GASTRIC MUCOSA ABNORMALITIES IN PATIENTS WITHOUT ACHLORHYDRIA

—	No. of patients without achlorhydria	Normal mucosa (%)	Abnormal mucosa (%)
Iron-deficiency anæmia	22	50	50
Controls	27	82	18

Effect of Treatment

Gastric analysis and mucosal biopsy were repeated in 5 patients in whom the hæmoglobin level had been restored to normal after iron therapy. 4 of these had achlorhydria, the histology showing atrophic gastritis in 2, and superficial gastritis in 2. Free hydrochloric acid reappeared in the gastric juice of both patients with superficial gastritis. The fifth patient, a man aged 20, had severe iron-deficiency anæmia with abundant hydrochloric acid in the gastric juice. The gastric mucosa showed the appearances of superficial gastritis. In none of these 5 patients did the second biopsy show any improvement in the mucosal histology.

Influence of Severity of Anæmia on Gastric Mucosa

No relationship was found between the degree of anæmia and mucosal changes. Normal mucosa was found in association with a hæmoglobin level as low as 2·7 g. per 100 ml., whereas atrophic gastritis was present when the hæmoglobin level was as high as 10·4 g. per 100 ml. The duration of the anæmia could not be estimated.

Glossitis

The cases of iron-deficiency anæmia have been analysed to determine whether any relation could be established between the changes in the gastric mucosa and the presence of glossitis. 17 patients had glossitis, 4 of whom (24%) had normal mucosa, and 13 (76%) histological evidence of gastritis. Of the 25 patients without glossitis 8 (32%) had normal mucosa, and 17 (68%) had gastritic changes. There is no significant difference between the two groups.

Discussion

It is clear from these findings that the gastric mucosa was abnormal in three-quarters of the patients with iron-deficiency anæmia, and that, when histamine-fast achlorhydria was present in this condition, the mucosa was abnormal in 95%. The histological abnormalities were chronic superficial gastritis, atrophic gastritis, or gastric atrophy, and there was no specific picture associated with iron-deficiency anæmia. Similar histological appearances were present in the controls, the only difference being that the incidence was considerably lower.

The close association between iron-deficiency anæmia and histamine-fast achlorhydria has again been demonstrated in this series, the incidence of achlorhydria being significantly higher than in the controls. The greater incidence of histamine-fast achlorhydria in the iron-deficiency-anæmia group is clearly not due to any age-difference between this and the controls, since it has already been pointed out that a slightly greater proportion of elderly patients was found among the controls. In all but 1 of our achlorhydric patients gross pathological changes were evident in the biopsy sample.

The relationship between chronic gastritis and achlorhydria is already well established (Faber 1927, Doig and Wood 1952), and it seems more reasonable to attribute the achlorhydria in our patients with iron-deficiency anæmia to these abnormalities in the gastric mucosa than to a depressant effect of the anæmia on the secretion of hydrochloric acid. In most cases the lesion was atrophic gastritis, and in a smaller number superficial gastritis or atrophy without significant inflammatory exudate was present. Of the controls all 4 patients with histamine-fast achlorhydria showed histological changes of gastric atrophy. Since, however, atrophic gastritis was found in 10% of the controls, it seems probable that either of these lesions may be responsible for achlorhydria in a similar group of non-anæmic patients.

The presence of mucosal abnormalities in the comparatively high proportion of 29% of controls is probably explained by the fact that the controls comprised not healthy young adults but patients with miscellaneous disorders, some of them debilitating. This selection was intentional, since it was considered that such a series would provide more satisfactory controls to the patients with iron-deficiency anæmia than would a similar number of healthy young adults. Our findings emphasise the non-specificity of the lesions observed in the gastric mucosa, which are not uncommon in patients with the symptoms of chronic gastritis and in patients in poor health for other reasons. In iron-deficiency anæmia, however, their incidence is especially high. It is noteworthy that, although Doig and Wood (1952) describe characteristic symptoms in their patients in whom chronic gastritis was diagnosed by gastric biopsy, a similar histological picture was not associated with dyspeptic symptoms in our cases. The cause of this discrepancy is not clear.

It has long been a controversial question whether achlorhydria precedes the anæmia, as was maintained by Oliver and Wilkinson (1933) and by Hartfall and Witts (1933), or the anæmia precedes the achlorhydria. The rôle of hydrochloric acid in connection with the absorption of iron is generally considered to be the reduction of ferric to ferrous ions, and absence of hydrochloric acid from the gastric juice is believed to precede and predispose to the development of iron-deficiency anæmia (Wintrobe 1951). On the other hand, hydrochloric acid may reappear in the gastric juice after correction of the anæmia by iron (Leonard 1954).

We have also observed the reappearance of hydrochloric acid, but we have not been able to detect any improvement in the histological appearances of the mucosa in the few cases in which a second biopsy specimen was obtained after iron therapy. Our observations, however, are too few to permit conclusions on this point. One would not expect an atrophic mucosa to show improvement other than, perhaps, regression of any inflammatory reaction. Superficial gastritis, however, may regress (Doig and Wood 1952), and it may be that in our cases biopsy was carried out too soon after correction of the anæmia. Follow-up gastric-biopsy studies in a large number of patients treated for iron-deficiency anæmia would be highly desirable.

More definite evidence of the order of events is our finding that superficial or atrophic gastritis was present in 50% of the 22 patients with iron-deficiency anæmia in whom there was no achlorhydria. If it is accepted that achlorhydria results from progressive inflammatory changes in the gastric mucosa, it appears from our findings that about half those patients with iron-deficiency anæmia and without achlorhydria have gastritic changes which may progress to achlorhydria. In these circumstances, therefore, the anæmia would precede the disappearance of free hydrochloric acid from the gastric juice.

It is possible to assume from these data that the first gastric lesion to develop in iron-deficiency anæmia is superficial gastritis, which may proceed to atrophic gastritis, with severe glandular atrophy. Failure of the secretion of hydrochloric acid results from the inflammatory changes and may be apparent at the stage of superficial gastritis. Achlorhydria would then appear to be a result of the gastritis caused by the iron-deficiency anæmia rather than antecedent to it. Glandular atrophy, once developed, is permanent, and achlorhydria persists despite treatment of the anæmia. At the stage of superficial gastritis, however, restoration of normal blood-levels may lead to the return of free hydrochloric acid and, possibly, to the regression of the inflammatory changes. The frequency with which gastric atrophy has been found in iron-deficiency anæmia, moreover, suggests that, at the stage of atrophic gastritis, the inflammatory reaction may regress, leaving a state of atrophy of the mucosa which, in its most extreme form, is identical with that found in classical pernicious anæmia. This conception of gastric atrophy as a late result of inflammation was held by Faber (1927) and has been reiterated by Palmer (1954).

It seems probable that iron-deficiency anæmia is a direct cause of the changes in the mucosa. An alternative explanation is that patients with superficial and atrophic gastritis, even before the secretion of hydrochloric acid has failed, are especially liable to develop iron-deficiency anæmia. If this is so, the high incidence of achlorhydria in this anæmia would then be due to its frequent development in these abnormalities of the gastric mucosa. Alternatively, when mucosal lesions are present, iron-deficiency anæmia may be related to diminished secretion of hydrochloric acid and not exclusively to its absence. We feel, however, that the facts more closely fit the hypothesis that the mucosal changes result in some way from the iron-deficiency anæmia.

No substantial difference, as regards gastric findings, was apparent between patients whose anæmia was due to blood-loss, and those in whom no such cause had been detected. Thus of the 15 cases with a recent history of menorrhagia 9 (60%) had an abnormal gastric mucosa and 6 (40%) had histamine-fast achlorhydria.

It remains to be considered whether the tiny fragments of gastric mucosa obtained by biopsy are representative of the mucosa of the body of the stomach as a whole. Though the possibility of patchy changes cannot be denied, on the numerous occasions on which we have obtained two biopsy specimens from widely separated sites the histological appearances have been essentially similar. Furthermore, there is a consistently close correlation between the histological evidence of atrophic gastritis or gastric atrophy in the biopsy specimen and the presence of histamine-fast achlorhydria. Lastly, Badenoch (1954) has shown a similar correlation with the secretion of pepsinogen.

Summary

Gastric biopsy specimens were obtained from 42 patients with iron-deficiency anæmia and from 31 controls.

The gastric mucosa was histologically abnormal in 74% of patients with iron-deficiency anæmia and in 29% of controls.

The lesions found in iron-deficiency anæmia were not specific and could be conveniently classified as superficial gastritis, atrophic gastritis, and gastric atrophy. These abnormalities occurred respectively in 31%, 33%, and 10% of the group with iron-deficiency anæmia, and in 6%, 10%, and 13% respectively in the controls.

The gastric mucosa was abnormal in all but 1 patient with achlorhydria.

50% of patients with iron-deficiency anæmia, but without achlorhydria, had abnormal mucosa, compared with 18% of controls. This finding suggests that achlorhydria develops after iron-deficiency anæmia has become established.

We wish to thank Dr. J. B. Rennie for help in the preparation of this paper and for granting us facilities to study patients in his wards; and Mr. P. S. Waldie, medical photographer Stobhill General Hospital, for the photomicrographs.

REFERENCES

Badenoch, J. (1954) *Proc. R. Soc. Med.* **47**, 426.
— Richards, W. C. D. (1953) *Gastroenterologia*, **79**, 329
Doig, R. K., Wood, I. J. (1952) *Med. J. Aust.* **1**, 593.
Faber, K. (1927) *Lancet*, **ii**, 901.
Hartfall, S. J., Witts, L. J. (1933) *Guy's Hosp. Rep.* **83**, 3.
Kay, A. W. (1953) *Brit. med. J.* **ii**, 77.
Leonard, B. J. (1954) *Lancet*, **i**, 899.
Oliver, T. H., Wilkinson, J. F. (1933) *Quart. J. Med.* **2**, 431.
Palmer, E. D. (1954) *Medicine, Baltimore*, **33**, 199.
Wintrobe, M. M. (1951) Clinical Hematology. London; p. 121.
Witts, L. J. (1930) *Guy's Hosp. Rep.* **80**, 253.
Wood, I. J., Doig, R. K., Motteram, R., Hughes, A. (1949) *Lancet*, **i**, 18.

THE EFFECT OF REPEATED TUBERCULIN TESTING ON POST-VACCINATION ALLERGY

A PRELIMINARY NOTE

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IN a previous paper we have reported that the intensity of B.C.G.-induced tuberculin sensitivity remains constant for at least five years after vaccination with Danish vaccine (W.H.O. Tuberculosis Research Office 1955). Many other workers, however, have reported that post-vaccination allergy does not persist but wanes and even may disappear in several years. In considering the possible causes for such discrepancies, the question was raised whether systematic periodic post-vaccination tuberculin testing, as practised by us, could be a relevant factor. Though the material available for examination is limited, our findings are sufficiently suggestive to warrant publication.

TABLE I—MEAN SIZE OF INDURATION OF REACTIONS TO THE INTRADERMAL 10 T.U. TEST THREE AND FOUR YEARS AFTER VACCINATION AMONG CHILDREN IN SPECIAL STUDIES

—	First study (three years after vaccination)		Second study (four years after vaccination)	
	Tested for first time after vaccination	Tested annually after vaccination	Tested for first time after vaccination	Tested annually after vaccination
Number ..	4	416	6	207
Mean (mm.)..	7·8	20·9	6·5	16·7

To investigate the possible effect of repeated tuberculin testing on the intensity and persistence of post-vaccination tuberculin sensitivity, we searched among the children in our special B.C.G. studies for those who were tested for the first time several years after vaccination. The allergy in these children was to be compared with the allergy in those who had been tested at regular yearly intervals after vaccination. For this purpose we selected two studies in which large numbers of school-children had been vaccinated with Danish standard-strength vaccine and tested three and four years after vaccination. Unfortunately for the present purpose the coverage at the annual retestings had been so complete that only 4 children in the first study were tested for the first time three years after vaccination, and 6 children in the second study four years after vaccination. Most of these 10 children had previously refused to be tested.

In table I the allergy at the three-year or four-year post-vaccination examination is compared in the groups with and without interim tuberculin tests.

All the children were tested intradermally with 10 T.U. of the P.P.D. product RT XIX-XX-XXI, 0·0002 mg. per 0·1 ml. The 4 children in the first study who were tested for the first time after vaccination at the three-year examination had reactions which on the average were 13 mm. smaller than those in children retested annually for three years. (The reactions in those 4 children measured 4, 6, 7, and 14 mm. in diameter.) In the second study the 6 children not previously tested had reactions which on the average were 10 mm. smaller than the rest of the group (and their reactions were 4, 5, 5, 6, 9, and 10 mm. in diameter). Despite the small numbers the results are very suggestive because, in our material, reactions of less than 10 mm. to 10 T.U. are extremely rare after vaccination with standard-strength vaccine.

These findings gave rise to a similar comparison of the post-vaccination allergy of children vaccinated in the Danish mass campaign and retested afterwards in the schools along with our study groups.

Accordingly "mass campaign" children were selected from two districts—district A, where the vaccinations had been given three years previously; and district B, where the vaccinations had been given four years previously. Within each district the children were

TABLE II—MEAN SIZE OF INDURATION OF REACTIONS TO THE INTRADERMAL 10 T.U. TEST THREE AND FOUR YEARS AFTER VACCINATION AMONG CHILDREN VACCINATED IN MASS CAMPAIGN IN TWO DISTRICTS

—	District A (three years after vaccination)		District B (four years after vaccination)	
	Tested for first time after vaccination	Tested annually after vaccination	Tested for first time after vaccination	Tested annually after vaccination
Number ..	114	54	138	102
Mean (mm.)..	12·0	18·6	9·5	17·7

separated into two groups: (1) those who had been tuberculin-tested annually since vaccination, and (2) those who had their first post-vaccination tuberculin test three or four years after vaccination. The results are given in table II, which shows the number of children in each subgroup and the average size of their reactions to the intradermal 10 T.U. tuberculin test. Children tested for the first time three years after vaccination had reactions averaging 12·0 mm. of induration; those who had been tested during the three-year interval had, on the average, reactions measuring 18·6 mm.—a difference of 6·6 mm. between the two groups. Corresponding results for the groups tested four years after vaccination showed a larger difference: 8·2 mm.

The material is deficient in several respects: it is not extensive and, more important, it is not the result of a systematic trial. However, the consistent trend in the results would seem to indicate that repeated tuberculin testing may influence the intensity and persistence of post-vaccination tuberculin allergy. What is needed now, to rule out the possibility of some kind of selection or bias, is a controlled study in which children in the groups to be compared are allocated at random.

REFERENCE

W.H.O. Tuberculosis Research Office (1955) *Bull. World Hlth Org.* **12**, 123.

ON EXPELLING TAPEWORMS WITH MEPACRINE

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AMONG the most nauseous of the galenicals surviving in the pharmacopœia is extract of male fern, traditionally used for dislodging tapeworms. Little has been written in its favour in recent years, and probably few persons with experience of its use have reason to be satisfied with its efficiency, though Asher (1953) cured 12 out of 13 patients at his first attempt—an exceptional record of success, which does him much credit. In my hands male fern has been thoroughly unsatisfactory, and since 1946 in only 12 of 38 cases of infection with *Tænia saginata* was the patient cured by a single course of treatment, whether the male fern was given in capsules, as a draught, or by duodenal tube, in each case after forty-eight hours' starvation and purging.

In 1952, being weary of the frequent failures attending the use of male fern, I made trial of mepacrine, which, as a remedy for tapeworms, has since 1946 been the subject of favourable reports in foreign journals. Accordingly, three women infected with *T. saginata*, after two days' abstinence from solid food, were given nine tablets of mepacrine (each of 0·1 g.) by mouth, followed by a saline purge. In the first patient the treatment was successful, but the other two vomited the mepacrine and continued to vomit for a day, for which reason I felt constrained to revert to male fern, which, though often the cause of vomiting, seemed to be less devastating in this respect than mepacrine.

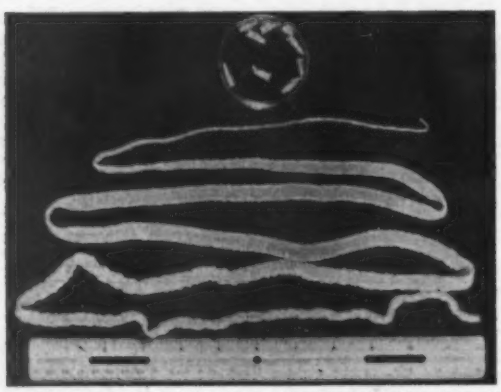

Fig. 1—A highly contracted *T. saginata* photographed half an hour after its evacuation. Relaxation of the hinder segments has begun.

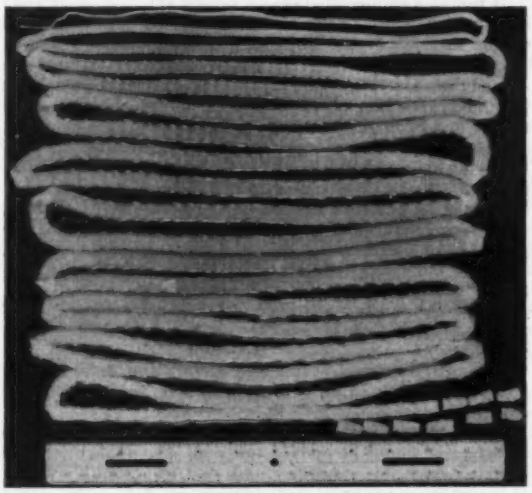

Fig. 2—The same worm as in fig. 1 photographed 24 hours later. Relaxation is complete.

Six consecutive failures with male fern in 1953, however, were so depressing that at the beginning of 1954 I decided to use mepacrine again, but to give it in solution through a duodenal tube, with the double purpose of avoiding vomiting from gastric irritation and of delivering a sudden large concentration of the drug in the neighbourhood of the attachment of the scolex, as recommended by Hornbostel and Dörken (1952).

Details of the treatment are as follows.

The patient is kept at rest and given liquids only for 2 days. On each day a saline aperient is given, and on the 2nd day an enema. On the 2nd evening 'Sodium amytal' gr. 3 is given, and a Ryle's tube is passed. By the morning of the 3rd day the end of the tube has usually passed well beyond the pylorus (as can be shown by radiography). Mepacrine 1 g. dissolved in 100 ml. of warm water is then gently squirted down the tube with a syringe. 15–30 minutes later 1½–2 oz. of magnesium sulphate in 100 ml. of warm water is given in the same way. The tube is then withdrawn, and the patient is given a hot drink. Purging usually begins within the hour, and the stools are collected and examined. The parasite comes away alive, stained with mepacrine, tightly contracted, and usually in a single piece (fig. 1). Relaxation of the worm to its normal dimensions begins at the hinder end and is complete within a few hours (fig. 2).

Results

Fifteen patients (six men, nine women) have been treated by this method during the past 18 months. All were infected with *T. saginata*. The worms were solitary in all cases save one, a butcher, who harboured two. In twelve patients (four men, eight women) the complete worm was passed. In two others (both men) after initial failure the worms were expelled at the second attempt. In the remaining patient (a woman) there was difficulty in passing a sufficient length of the Ryle's tube, and vomiting caused the treatment to fail.

Comment

These results are much better than those I have obtained by any other method, and mean that a patient

can now be given a reasonable assurance that he can be rid of his worm at the expense of 3 days' moderate discomfort in hospital—a price which most are willing to pay.

Certain points call for further comment. The published reports show that the best results are obtained when the patient is carefully prepared—preliminary starvation favours success. Adequate purging is essential after the mepacrine has been given, to sweep the worm from the intestine before it has recovered from the effects of the mepacrine. One of the initial failures was due to mistaken kindness in the matter of Epsom salts. The remaining initial failure was possibly due to the immaturity of the worm, of which a considerable length had been passed before treatment. There were no untoward effects other than occasional faintness during the operation of the purge.

REFERENCES

Asher, R. (1953) *Lancet*, i, 1019.
Hornbostel, H., Dörken, H. (1952) *Disch. med. Wschr.* 77, 339.

ACQUIRED RENAL DISEASE SIMULATING DIABETES INSIPIDUS

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THE term "water-losing nephritis" was applied by Roussak and Oleesky (1954) to chronic renal disease in which damage to the distal tubules leads to constant hyposthenuria.* The clinical picture is dominated by thirst and polyuria, and superficially simulates diabetes insipidus. Of their two patients one had myelomatosis, and at necropsy the distal convoluted and collecting tubules were found to be atrophic: the other had prostatic obstruction with hydronephrosis, but after prostatectomy recovered from his diabetes insipidus-like state.

A similar clinical picture with fixed hyposthenuria was described by Dyggve and Samsoe-Jensen (1947) in a 12-year-old boy with thirst and polyuria from about the age of 2 years. He had low urea and inulin clearances and a fixed urinary specific gravity of 1·004. Referring to this patient, Homer Smith (1951) comments: "From the data one may suspect severe injury of the distal tubules, with possibly some impairment of proximal reabsorption."

A fourth case (Darmady et al. 1955) is that of a woman, aged 31, with a short history of polyuria and polydipsia. The persistent hypotonicity of her urine was hardly altered by rate of solute output or by 'Pitressin' given during a "rapid infusion of 1·8% saline." The blood-urea level was not raised. Balance studies showed an excessive urinary loss of water, sodium, and chloride. At necropsy renal polyarteritis nodosa with widespread infarction was found, with damage both to proximal and distal tubules in the non-infarcted areas.

We report here two further cases of renal disease in which the clinical picture simulated diabetes insipidus.

* Constant hyposthenuria means that on all occasions the urine is of lower osmolarity than the plasma (which is normally over 300 milli-osmoles per litre), and the urinary specific gravity is fixed at a level below 1·010.

Case-reports

FIRST CASE

A man, aged 65, was admitted to Dundee Royal Infirmary on March 26, 1952. He had had difficulty in micturition since 1947, and during the last month had had excessive thirst and polyuria, passing large quantities of urine almost hourly by day and night. Moderate prostatic enlargement was the only noteworthy clinical finding. A 24-hour collection of urine measured 3·6 litres, the corresponding fluid intake being 3·4 litres. The urine contained a "trace" of protein, and no sugar. The blood-urea level was raised (86 mg. per 100 ml.), the plasma-acid phosphatase level was 3 King-Armstrong units per 100 ml., and plasma-chloride level 98 m.eq. per litre. The blood-sugar levels were normal. Intravenous pyelography on March 31, 1952, indicated very poor renal function, no dye appearing until 75 minutes after injection and then only outlining a left-sided hydronephrosis and hydro-ureter. The pituitary fossa was radiologically normal, and the visual fields were unrestricted. The precipitation test for syphilis was negative.

Investigation

During a study period of 72 hours urine was collected hourly, the patient being allowed to drink as much as he wished until the last 12 hours, when all fluids were withheld. Fig. 1 shows the fluid intake, urine volume, and urinary specific gravity (hydrometer). During most of the period the urinary volume was between 150 and 250 ml. per hour. The urine-chloride varied between 2 and 4 g. per litre and the specificity gravity of the urine between 1·004 and 1·007. On the 3rd day neither 20 units of intramuscular pitressin (Parke, Davis) nor the subsequent 12-hour period of fluid deprivation caused any significant change in the urine-chloride level or in the specific gravity, although there was a reduced rate of urine flow in the 2nd hour after pitressin had been given.

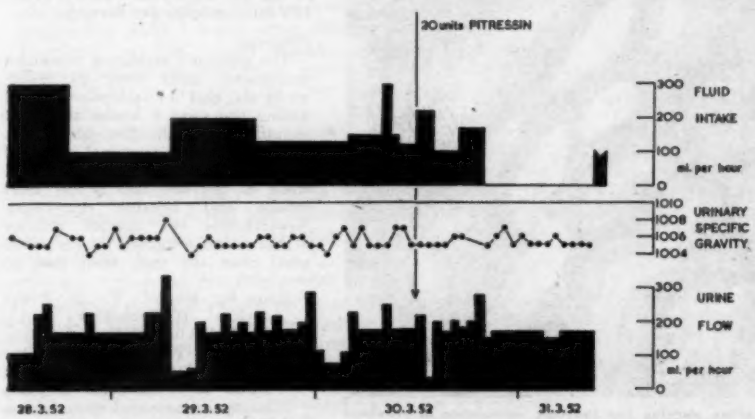

Fig. 1—Case 1: fluid intake, and volume and specific gravity of urine during 72-hr. period of study. All samples of urine contained 2–4 g. of chloride per litre (Fantus's method).

Effects of Cystostomy

Suprapubic cystostomy was performed on May 10, 1952. There was immediate and progressive reduction of thirst and polyuria, and the patient was soon allowed to go home. When he was readmitted 2 months later on July 9 he was quite free from thirst and polyuria. The specific gravity of random samples of his urine was 1·002–1·014, the highest urine-urea level 1800 mg. per 100 ml., and the blood-urea level normal (31 mg. per 100 ml.). Intravenous pyelography now showed normally functioning kidneys with neither hydronephrosis nor hydro-ureter.

Prostatectomy was attempted on July 19, 1952, by the suprapubic route, but the prostate was hard and fixed, and biopsy showed adenocarcinoma. Stilboestrol therapy was begun, and the patient was discharged home with a permanent

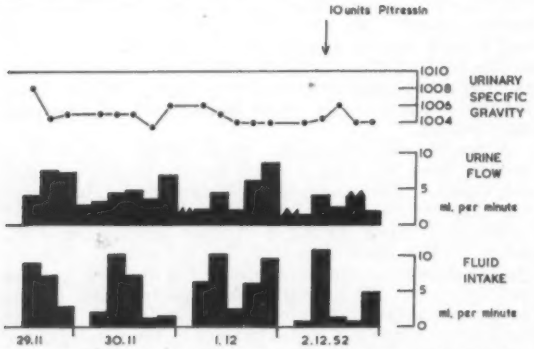

Fig. 2—Case 2: fluid intake, and volume and specific gravity of urine. During three 4-hr. periods of study patient was incontinent and volume of urine could not be measured.

suprapubic cystostomy. A year later he was in good general health, still free from thirst and polyuria, and able to enjoy a fairly happy retirement with daily outdoor exercise.

SECOND CASE

A girl, aged 14, was admitted to Dundee Royal Infirmary on Nov. 19, 1952, for investigation of thirst, polyuria, and bedwetting dating from early childhood. She had had dimness of vision for 6 weeks, frequent headaches for 3 years, and major epileptic fits from the age of 2 years, though these had been very infrequent during the past 5 years. It was impossible, however, to correlate the frequency of fits with the state of hydration. The fact that none of her 11 siblings or her parents had thirst or polyuria seemed to exclude the congenital and usually familial form of renal diabetes insipidus.

She was rather thin, weighed 98 lb., and was cheerful and active. She had severe hypertension (blood-pressure 240/170 mm. Hg), hypertensive retinopathy with papilloedema, and cardiac enlargement. There was no glucosuria, she had a proteinuria of about 0·3 g. per litre, and the urinary specific gravity ranged from 1·000 to 1·008 (ward hydrometer).

Investigations

Ward measurements of daily urinary volume varied between 1230 and 6500 ml., the average being about 3000 ml. Accurate measurement was difficult because of nocturnal bedwetting. An attempt to demonstrate the kidneys by intravenous pyelography failed. The blood-urea level was 105 mg. per 100 ml. on Nov. 22, 1952. Radiographs of pituitary fossa, chest, and abdomen were normal. During a urea range test the specific gravity of the urine ranged from 1·001 to 1·008 and the urinary urea from 150 to 850 mg. per 100 ml. There was a normochromic normocytic anæmia, Hb 12 g. per 100 ml., and white-cell count 6500 per c.mm. Electrocardiography showed the pattern of left ventricular hypertrophy. On Dec. 2, 1952, the plasma-sodium level was 118 m.eq. per litre, the plasma-chloride 97 m.eq. per litre, the plasma-potassium 4·3 m.eq. per litre, and the blood-urea 115 mg. per 100 ml. The Wassermann test was negative.

During a 3-day period (fig. 2) the daily fluid intakes were 7412, 6220, and 6986 ml. and the corresponding urinary volumes 6674, 5112 +, and 5339 + ml., the last two collections being incomplete because of nocturnal incontinence. The specific gravities of all the specimens of urine were estimated with a sensitive urinometer,† with frequent gravimetric check, and correction for temperature; the effect of proteinuria, which stayed in the region of 0·3 g. per litre, was insignificant. The urinary specific gravity was 1·003–1·008; urinary sodium 17–34 m.eq. per litre; urinary potassium 10·0–23·5 m.eq. per litre, urinary chloride 14·0–54·5 m.eq. per litre, and urinary urea 300–700 mg. per 100 ml. The urinary osmolarity was estimated approximately from the chemical estimations by calculating urea (including ammonium) + 2 (sodium and potassium) expressed in milli-osmoles, and was constantly hyposthenuric in a range from 110 to 243 milli-osmoles per litre.

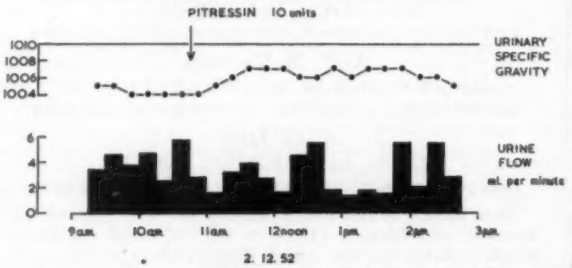

Fig. 3—Case 2: response of volume and specific gravity of urine to intramuscular pitressin 10 units.

For 6 hours on the 3rd day of the study period (fig. 3) urine was collected at 15-minute intervals by catheter. At the end of $1^1/_2$ hours 10 units of pitressin was injected intramuscularly. This raised the urinary specific gravity from 1·004 to 1·007 and brought the urine close to isotonicity with the plasma, estimated as described above from the chemical composition. A subsequent period of fluid deprivation could not be maintained beyond 6 hours, because of intense thirst. During this time the specific gravity of the urine did not rise above 1·005, nor the estimated urinary osmolarity above 150 milli-osmoles per litre.

Progress

The patient's condition remained unchanged until Dec. 25, 1952, when she had an epileptic fit, and during the next 6 weeks she went steadily downhill, her blood-urea level rising to a terminal value of 534 mg. per 100 ml. In her last week of life she had a low fluid intake and became dehyrated. Nevertheless the specific gravity of her urine remained about 1·005 until near the end, then rose to

Fig. 4—Case 2: non-fibrotic area of renal cortex showing fine hydropic vacuolation of proximal tubules which resembles "sucrose nephrosis." No infusion had been given to patient. (Van Gieson. × 198.)

† Made by Messrs. T. O. Blake (Sykes Hydrometers) Ltd.), 25, Bellevue Terrace, London, N.W.4 (wholesale only). This model is graduated from 1·000 to 1·030 and is both more accurate and more legible than the usual 1·000–1·060 urinometer.

1·008 on Jan. 31, 1953, and to 1·011 in the last few hours of life on Feb. 2. The calculated osmolarities corresponding to these last two specific gravities were 195 and 235 milli-osmoles per litre. Fluids were not forced, nor infusions given. There were terminal signs of bronchopneumonia and pericarditis.

Necropsy

Necropsy three hours after death showed acute tuberculous bronchopneumonia in the right upper lobe, and generalised pyogenic bronchopneumonia. The heart was enlarged (410 g.) with left ventricular hypertrophy and pericarditis. The kidneys were small (45 g. and 84 g.) with adherent capsules showing irregular cortical scarring and narrowing. There was no obvious infection of the urinary tract and no gross hydronephrosis or nephrocalcinosis. The pituitary gland, hypothalamus, adrenal glands, and parathyroid glands appeared normal.

Histology

The smaller kidney is merely a shell of fibrous tissue. In the cortex of the larger kidney, areas with prominent widely dilated tubules and variable amounts of interstitial fibrosis are interspersed with relatively dense scar tissue containing concentrically obliterated glomeruli, a few atrophic tubules, and interstitial lymphocytic infiltrate. The glomeruli show changes varying from early pericapsular fibrosis to concentric destruction, without crescent formation; only a few are hypertrophic. The tubule diameter varies enormously, up to almost 0·5 mm. In large numbers of the dilated tubules, chiefly proximal but also possibly sometimes distal, the lining epithelium is prominent; the cells are tall, pale, and very finely vacuolated or hydropic (fig. 4), and this hydropic change is seen at times also in the cells lining Bowman's capsule. In other tubules the cells are either uniformly strongly eosinophil or contain obvious hyaline "droplets" of eosinophil (and usually phloxinophil) material. However, some dilated tubules have flattened or cuboidal dark-staining epithelium. Almost every tubule contains protein. In the medulla occasional tubules contain polymorphs, and more contain granular debris and red cells; no calcification is seen, and the epithelium shows no distinctive abnormality. The renal arterioles show medial hypertrophy, and in one section fibrinoid changes are common.

No significant changes were detected in sections of hypothalamus, pituitary gland, myocardium, liver, spleen, or pancreas.

In this case advanced chronic pyelonephritis and hypertension were diagnosed. The changes in the cells of the convoluted tubules, chiefly proximal, closely resembled those seen in the kidney in the condition described by Allen (1952) as osmotic nephrosis: in this condition, usually associated with infusion of hypertonic solutions of sugars, there is presumed to be imbibition of fluid by the tubular cells. Hydropic changes occur also in tubule cells immersed in hypotonic solutions in vitro (Opie 1947), and Bracey (1950) suggests overhydration in vivo as a possible cause. In our patient, however, fluids were never forced, nor was any sugar given intravenously, and no explanation of these tubular changes can be offered. The level of potassium in her pericardial fluid 3 hours after death was only 1·5 m.eq. per litre, but the tubule changes described as possibly due to potassium deficiency are very gross vacuolation (Keye 1952) rather than the very fine hydropic changes present here.

Of the clinically similar cases only two came to necropsy: one was a myeloma (case 2 of Roussak and Oleesky 1954) and the other polyarteritis nodosa (Darmady et al. 1955); lesions were found on microdissection in the distal and collecting tubules, but only in the latter case was damage to proximal tubules described.

Discussion

In both patients severe thirst and polyuria suggested diabetes insipidus. However, failure to show the antidiuretic and urine-concentrating effect of pitressin indicated abnormal renal function and suggested that the renal disease, which was clinically obvious in both cases, was the explanation of the polyuria. The low upper limits of the specific gravity suggested fairly constant hyposthenuria, but absolute proof of an obligatory constant hyposthenuria in these uræmic patients is lacking because our investigations were incomplete. We were unable to estimate the ranges of urinary osmolarity and urine/plasma ratios for osmolarity under sufficiently varied conditions, such as loading or restriction of water, nitrogen, or electrolytes.

Our first patient's illness was very similar to that of Roussak and Oleesky's second patient, in that both had partial obstruction to urine flow with back-pressure leading to bilateral hydronephrosis, azotæmia, and hyposthenuria; surgical relief of the obstruction largely restored function, including the ability to vary the concentration of the urine. Although cases such as this are probably rare in general medical and surgical wards, the fact that in two out of the six reported cases the patient had prostatic obstruction suggests that the syndrome might well be sought in urological clinics. These cases also show that the tubular dysfunction presumed to underly this form of diabetes may be reversible.

Our second patient had severe chronic atrophic pyelonephritis. In addition, the histological examination revealed a remarkable abnormality in many of the tubular cells; this resembles the change described in "sucrose nephrosis," but whether this is a significant part of the morbid anatomy will not be known till further cases have been examined. Although antidiuretic hormone is generally believed to act on the distal tubule, in none of the three cases examined post mortem was it possible to define clearly and specifically the part of the tubular system at fault.

Summary

Two patients are described in whom diabetes insipidus was simulated by chronic renal failure, with severe thirst, polyuria, and constant hyposthenuria.

The fatal case had chronic atrophic pyelonephritis with hydropic changes in the renal tubules; the other patient had prostatic obstruction and hydronephrosis but recovered after relief of urinary obstruction.

We are grateful to Mr. F. R. Brown and Dr. J. M. Morgan for permission to investigate these cases; to Dr. J. Barrie Brown for help in following up case 1; and to Prof. A. C. Lendrum and Prof. I. G. W. Hill for help with our report.

REFERENCES

Allen, A. C. (1952) The Kidney. London.
Bracey, D. W. (1950) *Lancet*, ii, 365, 469.
Darmady, E. M., Griffiths, W. J., Spencer, H., Mattingly, D., Stranak, F., de Wardener, H. E. (1955) *Ibid*, i, 378.
Dyggve, H., Samsøe-Jensen, T. (1947) *Acta pædiatr., Stockh.* **34**, 174.
Keye, J. D. jun. (1952) *Circulation*, **5**, 766.
Opie, E. L. (1947) *J. exp. Med.* **86**, 45.
Roussak, N. J., Oleesky, S. (1954) *Quart. J. Med.* **23**, 147.
Smith, H. W. (1951) The Kidney. New York.

PALLIATIVE INTUBATION IN CARCINOMA OF ŒSOPHAGUS *

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THE feeding of patients who have stenosing neoplasms of the œsophagus is very difficult, particularly where poor morale aggravates poor health.

Metal tubes are not always well tolerated, and their insertion causes trauma. We have therefore used a plastic tube, which has proved more satisfactory.

Methods

The Apparatus

The apparatus consists of a plastic tube, a bougie, and an introducer (figs. 1 and 2).

* Abridged from a paper read at a congress of the International Broncho-Œsophagological Society at Lisbon in October, 1954, in collaboration with Dr. J. TRIBOULET-PITON (Paris).

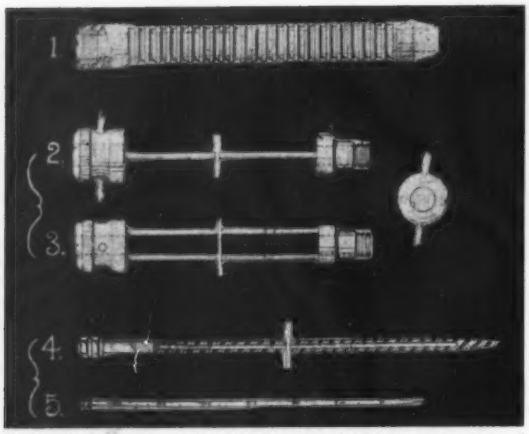

Fig. 1—The apparatus: 1, tube, showing interior construction of upper part; 2 and 3, introducer (plan, lateral, and section); 4, bougie; and 5, metal rod.

The tube is made of polyvinyl chloride containing about 35% of pliable material. The length is 13 cm., the internal diameter 10 mm., and the external diameter 14 mm., At each end the wall is thickened for a length of 2 cm. to form a collar, cylindrical above and conical below, which projects 1·5 mm. so as to diminish the risk of slipping up or down. The wall of this collar contains a small metal ring, so that the tube can be localised by radiography. The metal ring in the upper end bears a thread, to which the introducer is screwed. To keep the tube immobile in the tumour once it is in position, its external surface is moulded into rings (fig. 1). The plastic material, being thermolabile at body-temperature, is remoulded to the shape of the tumour, which holds it tightly within the stenosis.

The bougie (fig. 1) is both for exploring and for dilating. It is 80 cm. long and made of gum-elastic, and its diameter corresponds to the internal diameter of the tube, with just enough play to avoid jamming. Its surface is graduated in 5 cm. Inside is a fine metal rod, 70 cm. long, leaving the distal end free and flexible. This central rod is essential to the rigidity necessary to explore the stenosis.

The introducer (fig. 1) is 70 cm. long and made up of two parallel metal bars joined and fixed at each end by a ring. The distal ring bears a screw thread corresponding to that on the upper end of the tube, allowing one to be attached to the other.

Technique

The insertion of the tube involves a dangerous manipulation, and the operator must exercise extreme care and gentleness. He must learn to recognise and admit failure, and must never force a passage.

We insert the tube under general anæsthesia. The poor condition of these patients necessitates careful premedication. We usually give pentobarbitone sodium 60–120 mg. per rectum the night before, and pentobarbitone, atropine, and promethazine hydrochloride an hour before. Anæsthesia induced with a 2·5% solution of thiopentone and suxamethonium chloride produces complete muscle relaxation, which greatly helps the passage of the œsophagoscope through the cricopharyngeal sphincter.

There are five steps in intubation: (1) œsophagoscopy; (2) exploration of the stenosis; (3) introduction of the tube; (4) withdrawal of the bougie; and (5) verification.

(1) *Œsophagoscopy* is done by the usual technique, but the particularly wide diameter of the œsophagoscope (Souttar's or Resano's) which we use necessitates accurate manipulation to avoid damaging the upper teeth, the posterior wall of the hypopharynx, and the cricopharyngeal sphincter. The œsophagoscope is introduced as far as the upper level of the tumour.

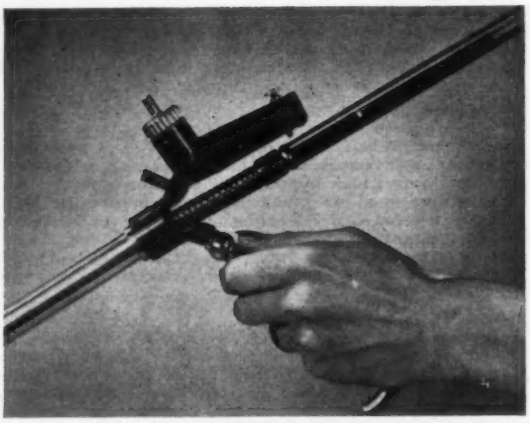

Fig. 2—Apparatus assembled ready for intubation.

(2) *Exploration of the stenosis* is done with the bougie, which must be well lubricated with liquid paraffin to prevent friction. One must search carefully for the opening of the remaining lumen, often masked by neoplastic outgrowths. The bougie is introduced slowly with continuous pressure to overcome resistance gradually. The graduations on the bougie allow one to verify the position at any time. Sometimes the bougie cannot progress. Another passage must then be sought; but, if the lumen is very narrow, one should proceed no further. This exploration is most important: if well done, it facilitates intubation, but if badly done it leads to accidents.

(3) *Introduction of tube.*—After careful lubrication of the screw thread, the introducer is attached. The tube is then threaded over the bougie, which acts as a guide and directs the tube to the upper level of the tumour. Firm and continuous pressure is applied until the upper collar of the tube is in contact with the lesion. Here again the graduations on the bougie help one to verify the position. If the resistance appears too great, further introduction should not be risked.

(4) *Withdrawal of the bougie* is done after the introducer has been unscrewed from the tube. To avoid any displacement, the tube must be kept in position while the bougie is being withdrawn.

(5) *Verification.*—Satisfactory positioning of the tube is verified, and gentle aspiration will establish whether there is any obstruction.

Postoperative Management

Antibiotics are given for four or five days. Fluid diet is given for forty-eight hours, and then normal diet is gradually introduced. The patient should be instructed to chew all his food carefully and to drink water with his meals. Sedatives are given for dorsal or retrosternal pain or for severe fits of coughing which are apt to displace the tube.

On the day following intubation chest radiography and a barium swallow must be done to confirm the position and the patency of the tube.

Results

I started trials with this tube in February, 1954, at the Broussais Hospital, Paris, in the clinic of Professor de Gaudard d'Allaines, under the guidance of Assistant Professor Lortat-Jacob. I was enabled to study 16 patients affected by inoperable neoplastic stenosis of the œsophagus.

We failed in 4 cases: in 3 the stenosis was too great, and in 1 œsophagoscopy was impossible because of an aortic aneurysm.

Intubation proved possible in 12 patients aged 60–65 (extremes 46 and 72). The average length of their survival (excluding 1 patient who died on the fourteenth day) was three months ; 3 patients were still living after three and a half months.

No mishaps were evident during operation, but secondary perforation and œsophago-tracheal fistula were discovered by radiography on the second postoperative day in the patient aged 72. In 2 cases the tube slipped and was passed per rectum. Obstruction occurred in 2 cases : one patient swallowed a piece of meat which was too large, and in another the tumour grew into the lumen of the tube.

Comments

The indications, contra-indications, and possible complications are the same as for intubation with a metal tube.

The advantages of this method of intubation are as follows :

(1) The tube is malleable on warming and moulds itself better in the tumour, and, if it slips into the stomach, passes through the intestine.
(2) The tube weighs less than a metal tube.
(3) The tube has a conical extremity which makes introduction easier and lessens the risk of trauma.
(4) The bougie, which both dilates and explores, is graduated.
(5) The introducer, being incorporated with the tube, makes positioning of the latter accurate.

It is easy to appreciate the benefit to morale afforded by this palliative treatment to patients otherwise condemned to a gastrostomy—an operation which, besides carrying a considerable risk causes more trauma.

DUAL CAUSE OF RAPID DEATH

A CASE-REPORT

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CASES of sudden death in which necropsy reveals two lesions either of which could have been fatal seem to be uncommon. Reports of single cases by Morris (1950) and Mackintosh (1951) in the correspondence columns of this journal did not evoke similar reports from any other pathologist. Before this Wenger (1943) had reported one case. Simpson (1947) in his review of 6267 cases of sudden death does not quote any with a dual cause.

Case-report

A male nurse, aged 61 and in good health, suddenly collapsed. He was examined within 10 minutes and was found to be shocked and vomiting, with a rapid forceful pulse. He had left hemiplegia and deviation of head and eyes to the right. Within 2 hours of the onset he was dead, without showing any significant change in his clinical condition except for general deterioration.

Necropsy

The body was that of a rather obese man with no external abnormality.

Cranial Cavity.—There was a large cerebral hæmorrhage in the region of the internal capsule on the right. The blood had extended into the cerebral ventricles and out into the subarachnoid space on the inferior aspect of the cerebellum. The cerebral arteries appeared to be normal. There were no berry aneurysms of the cerebral arteries and almost no atheroma.

Thorax.—There was a dissecting aneurysm of the aorta arising from a split in the intima of the arch. The blood had dissected proximally to just above the aortic valve and distally almost to the diaphragm. The dissection had also proceeded for about 1 cm. up the right common carotid artery and the innominate artery. The aorta had ruptured somewhere in the mediastinum, filling the space with blood and bursting through into the left pleural cavity. There was much hypertrophy of the myocardium of the left ventricle but the heart was otherwise normal. The coronary arteries were unusually free from atheroma.

The left lung was somewhat compressed by the blood in the pleural cavity and was congested and œdematous. This contrasted with the right lung, which, apart from slight congestion, was normal.

Abdomen.—The abdominal organs were normal.

Histology

The aorta showed moderate atheroma and some degenerative changes in the media consisting in patchy hyalinisation and streaking with blue-staining material (hæmatoxylin and eosin), the so-called mucoid change. No cystic spaces were present. There was only slight atheroma of the cerebral arteries. The kidneys showed arteriosclerotic change.

Discussion

The table shows the main features of the previously reported cases and the present one.

—	Age	Sex	Lesion 1	Lesion 2
Morris ..	53	F	Left cerebral hæmorrhage	Hæmopericardium due to rupture of aorta just above the aortic valve
Mackintosh	32	F	Left cerebral hæmorrhage	Rupture of the wall of the right ventricle with hæmopericardium
Wenger ..	70	F	Right cerebral hæmorrhage	Rupture of the aorta with hæmopericardium
Foster ..	61	M	Right cerebral hæmorrhage	Dissecting aneurysm of the aorta with rupture into the mediastinum

In the present case the duration of the terminal illness was two hours. In the other cases the precise duration was not known, but the patients had been in good health 4–5 hours previously. The possible natural causes of death within this short period are not numerous ; and indeed to cerebral hæmorrhage and rupture of the heart or great vessel probably only coronary occlusion, subarachnoid hæmorrhage, pulmonary embolus, and cerebral embolus could be added. Although four cases with dual lesions is a small number from which to draw conclusions, it is perhaps significant that all have shown two hæmorrhages. This suggests that the ætiological factors are either a weakness of blood-vessels or heart wall, or an excessive pressure within them, or both. Mackintosh's case hardly supports the possibility that weakness of the wall is the primary factor, for he reports that the ruptured right ventricle was otherwise healthy. It is a little difficult to accept this in the absence of trauma, the most likely precipitating lesion being a miliary infarction.

With regard to which lesion occurs first, in Wenger's case it was the cerebral hæmorrhage ; in the other two (which were in persons found dead) it was unknown. In the present case the patient was examined almost immediately and found to have unequivocal signs of a cerebral hæmorrhage. The rupture of the aorta cannot have occurred before the cerebral hæmorrhage, and must therefore have occurred at the same moment or later. If the two ruptures were simultaneous, what could have caused them ?

It is perhaps more likely that in all the cases the cerebral hæmorrhage occurred first and that the consequent rise in the intracranial pressure led to a reflex rise of the blood-pressure which resulted in rupture at another point in the circulatory system where there was also structural weakness—in the present case mucoid degeneration in the aortic wall.

I am indebted to Dr. J. L. Pinniger for criticism of the manuscript.

REFERENCES

Mackintosh, R. H. (1951) *Lancet*, i, 238.
Morris, J. B. (1950) *Ibid*, ii, 118.
Simpson, K. (1947) *Ibid*, ii, 745.
Wenger, F. (1943) *Arch. Path.* 36, 253.

New Inventions

A LARYNGOSCOPE FOR BRONCHOGRAPHY

THIS laryngoscope is an adaptation of an instrument developed by Dr. C. Gianturco, of the Carle Hospital Clinic, Urbana, Illinois, U.S.A., to facilitate passing a catheter when using the oral-intubation method of bronchography.* The working part of this device has been adapted in this country as a blade to fit the standard Macintosh laryngoscope handle.

The instrument consists essentially of an L-section blade whose lower face is a flat tongue-depressor. The upright face is curved at the free edge, and a groove along the curve carries and directs a no. 6 Jaques rubber catheter. The mirror is fixed to the upright face and is illuminated by a bulb and carrier placed in the angle of the blade. The whole blade is mounted and hinged on the handle containing the batteries. The mirror is adjusted so that when the tip of the catheter projects one inch from the distal end of the groove it is seen at the centre of the mirror.

Adequate anæsthesia has been obtained with a lozenge containing amethocaine 100 mg. sucked for ten minutes, and by anæsthetisation of the pyriform fossæ and epiglottis with 2% amethocaine 1·5–2 ml. If necessary, a further 1·5 ml. of amethocaine can be given through the catheter immediately after it has been passed.

The instrument is best passed with the patient sitting upright facing directly forwards. The laryngoscope is introduced by sliding it over the dorsum of the tongue in the midline while depressing the handle. The laryngeal orifice is usually seen in the mirror to the right tip of the epiglottis. The catheter, already threaded along the groove of the instrument, is gently introduced until its tip passes over the epiglottis; it then usually enters the laryngeal orifice. The catheter should be advanced 3 inches, and the buccal end should be strapped to the side of the face after removal of the laryngoscope. The patient should be asked to phonate or to cough while gently grasping the catheter between his lips, and the change in voice or the blowing of air through the catheter proves its continued presence in the larynx.

It is essential that a fairly new and stiff catheter should be used because, after frequent boiling, a catheter becomes too soft and is inclined to curl up in the pharynx.

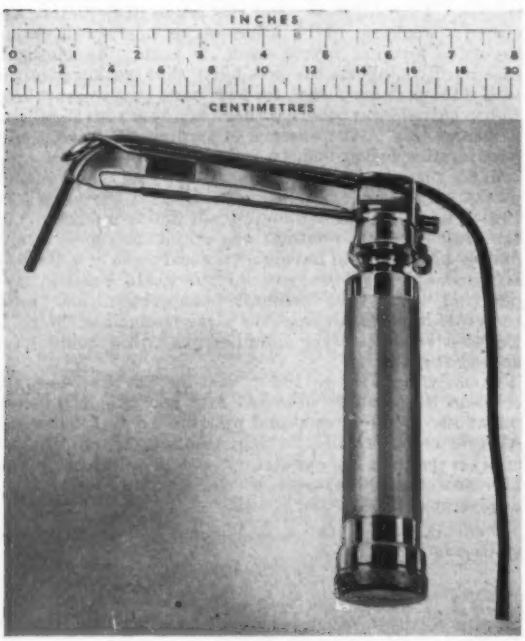
In young adolescents difficulty is sometimes experienced in seeing the laryngeal orifice, owing to the acute angle between the laryngeal orifice and the dorsum of the tongue. Elevation of the handle of the laryngoscope, producing forward displacement of the base of the tongue, will bring the laryngeal orifice into view and into the correct position for introduction of the catheter.

This technique is quicker and pleasanter for the patients than are others in common use, and on two occasions bronchograms have been easily obtained in patients who had previously not tolerated other methods.

I thank the medical staff of Yardley Green Hospital, Birmingham, for their coöperation and advice in trying this instrument. I am most grateful to Messrs. Glaxo Laboratories and Messrs. Longworth, who provided the original model for clinical trial, and have undertaken subsequent modifications. The instrument can be obtained from the Longworth Scientific Instrument Co., Ltd., Thames Street, Abingdon-on-Thames, Berks.

BARBARA J. SALISBURY
M.B. Lond., D.C.H.
London, W.8

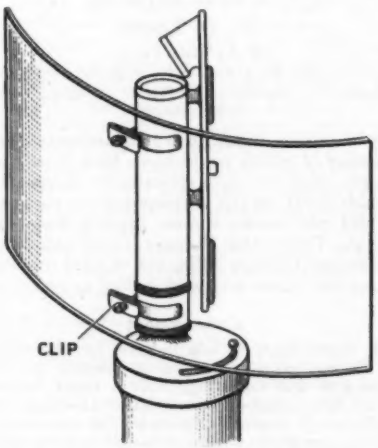
* Dr. Gianturco demonstrated the original device at the annual meeting of the Radiological Society of North America in December, 1954.



A BREATH SHIELD FOR OPHTHALMOSCOPY

THE advantages of shielding the breath during ophthalmoscopy are obvious; but condensation of water vapour on the glass must be avoided, and some people object to wearing a mask at consultations.

Using the breath shield described below, both the patient's and the examiner's breath are directed away from the instrument. I made it from a sheet of 'Perspex' 6 × 3 × 1/8 in. curved to a diameter of 7 in.: this



is achieved by softening the sheet of perspex with heat and then moulding it over a 7 in. biscuit tin. Two size-1 Terry clips, with the tips cut off and gently curved at the base, are then bolted to the midline of the shield, 1/4 in. and 1/2 in. from the edge, with small machine screws and bolts. The shield is now ready, and can be clipped on to the head of a Lister-Morton ophthalmoscope as shown in the figure.

For those who use the ophthalmoscope horizontally, the perspex sheet will have to be larger—i.e., about 9 in. square, with one side cut down to 3 in. in the form of a shallow V, and with a curve of about 10 in. diameter. The clips can be adapted to suit other types of ophthalmoscopes.

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Reviews of Books

Homosexuality

D. J. WEST, M.B., D.P.M. London: Duckworth. 1955. Pp. 145. 15*s*.

ALL of us like to believe that our judgments depend on the weight of evidence. When, therefore, a subject evokes an immediate response, we should be doubly careful.

Of all the factors which keep the discussion of this particular sexual problem firmly in the field of anger, fear, and emotion, ignorance is the chief. Perhaps the two most damaging misconceptions are that "homosexuals" are an identifiable group, "the queers," possessing impulses which "we," the normal citizens, do not share, and that those who show homosexual tendencies are likely to molest children. For clearing the air of these ideas, and of the concept of homosexuality as "unnatural" and therefore magical, Dr. West's book would be hard to better. It is humane, factual, and (perhaps best of all) accessible and intelligible to anyone not too deeply disturbed by the subject to read it.

His picture of the facts is this. All mammals, and probably all human beings, possess the capacity to respond sexually to members of their own, as well as the opposite, sex. In human societies which permit or tolerate it, or under conditions where males are segregated, such expression may be widespread or the rule—though this is no argument for its desirability. In our own society, the degree to which this response is evident varies widely from individual to individual, and there are people in whom it largely or wholly replaces response to the other sex. There is overwhelming evidence that the main factor in determining this predominance is upbringing, in the widest sense. "Homosexuals" are not distinguished by any anthropometric characters; the direction of their impulse is virtually unaffected by hormones, though its intensity can be modified; and in physical intersexes the direction of impulse is determined not by the chromosomal sex but by the fact of rearing as a male or a female. The "biological invert" of some authors is almost certainly a figment of self-justifying patients; and legal measures based on his existence would be a blunder of the first order.

Predominant homosexuality could well be a disability in any culture, and in one which exposes the subject to hatred and contempt it is a grave disability. To this extent, it constitutes a psychiatric problem—though not an inherently graver one than many similar but less emotive disabilities in sociosexual relations. Is this its only importance? That, in essence, is the problem before the Royal Commission, and before public opinion, and it is one which can be—though it rarely is—discussed in terms of fact. To this discussion Dr. West's book again contributes admirably. He says that there is no evidence that even exclusively homosexual persons molest children more commonly than heterosexual, and that, when they do, much of the mischief which arises is the result of the ensuing uproar, rather than of the interference per se. More important to the present controversy, however, is the fact that the attitude which a person will adopt to the question of punishing homosexual behaviour, like his attitude toward capital punishment, is so predictable in terms of his personality that it can be used as a marker for test purposes. In fact for some the psychology of anti-homosexualism bears some resemblance to the psychology of anti-semitism. Among soberer opinion, there are those for whom the belief that such "disgusting practices which corrupt the life of the community" merit savage punishment is axiomatic, and to question their deep moral importance is in itself immoral. For others, homosexual behaviour is at worst an illness and at best an idiosyncrasy, whose social importance stems entirely from the reaction of fear and anger which it evokes. Dr. West offers no attempt to reconcile the irreconcilables, though he himself clearly inclines to the second view. His book, however, shows once more that the present situation is unsatisfactory in terms of both arguments. If the continuance of homosexual behaviour in private is a threat to the community, then the present law, even with the backing of public infamy for the convicted, wholly fails to prevent its widespread occurrence. If it is not, then we have a good deal to answer for.

The Nucleic Acids

Chemistry and Biology. Vols. I and II. Editors: ERWIN CHARGAFF, department of biochemistry, Columbia University, New York; J. N. DAVIDSON, department of biochemistry, University of Glasgow. New York and London: Academic Press. 1955. Vol. I, pp. 692. $16.80. Vol. II, pp. 576. $14.50.

THERE has been no comprehensive treatise on the nucleic acids for some little time, and within recent years there have been great advances in our knowledge of the chemistry and biological significance of these substances. Chargaff and Davidson have set out to bring together into a two-volume work as much as possible of the knowledge which has recently been acquired. This they have done by getting a considerable number of experts to participate in writing a planned series of articles each dealing with a specific part of the subject.

Vol. I contains 15 chapters (by 19 authors and co-authors, all but 1 of them working in Britain or the United States). They deal in turn with the historical aspects of the subject, the chemistry of the carbohydrates and bases set free by hydrolysis, and their separation and estimation. Then follow two long chapters on the isolation and composition of deoxypentose and pentose nucleic acids and of the corresponding nucleoproteins. The nature of the chemical bonding in the acids and their physical and optical properties are then dealt with in turn, and the volume concludes with another long chapter on the nucleases and other enzymes which attack the nucleic acids and their derivatives.

It is well that the second volume has followed hard on the heels of the first; for the two volumes make an integrated whole of which the joint organisers may feel justly proud.

Volume II, arranged in exactly the same way as volume I, deals with the biological aspects and opens with a chapter on the nucleic acid content of tissues and cells by I. Leslie. Chapters follow on cytochemical techniques, the isolation of cell nuclei (by A. L. Dounce, who has himself done so much to make this practicable), the deoxyribonucleic acid content of the nucleus, the behaviour of the nucleic acids in mitosis, the cytoplasm, the biosynthesis of pentoses and of purines and pyrimidines, nucleosides and nucleotides, and nucleic acids. The last three chapters are on the metabolism of the nucleic acids and the biological rôle of the two nucleic acids.

The subject matter is so arranged that it works up to a really physiological finish, and the authors are a representative international crew hailing from France, Belgium, Sweden, England, Scotland, and the United States. In reviewing their efforts it is hard to improve on Ouida's classic statement: "All rowed fast, but none so fast as stroke." We look forward to second and third editions of this work and hope the editors will not find the task of keeping themselves and their contributors up to date too onerous. They have made a fine start.

Cancer: Race and Geography

P. E. STEINER, M.D., professor of pathology, University of Chicago. Baltimore: Williams & Wilkins. London: Baillière, Tindall, & Cox. 1955. Pp. 364. 38*s*. 6*d*.

THE distribution of malignant disease among the different races of the world and in various geographical areas provides problems of very considerable interest about which too little is known. Dr. Steiner has made a survey of necropsy material in the Los Angeles County Hospital between 1918 and 1947. He has analysed 35,293 necropsies, in which 17·21%, or 6072, showed malignant disease. He claims that his series has a particular advantage for a study of geographical and racial distribution, since the patients attending the Los Angeles County Hospital show a wide variety of racial difference. The cases with tumours have been divided into four main groups which have been given the titles Caucasoid (a general mixture of European races), 5120 cases; Negroid ("Afro-Americans"), 284 cases; Mexicans (including Spanish Americans and immigrants from Mexico), 590 cases; and Mongoloids (including Japanese, Chinese, and Philippinos), 78 cases. The tumours are classified according to type and listed under 53 headings in order of frequency. From group 29 onwards, fewer than 20 cases appear in each subdivision, and groups 48–53 include

only 1 example of each variety. Professor Steiner analyses the first 20 groups, which make up 91·2% of the total, and attempts to compare and contrast the incidence of tumours in the different groups with the racial and geographical background of the patients. He admits that often no dogmatic statements can be made, but his main conclusion is that morphological differences in malignant disease depend on environmental rather than on hereditary factors in ætiology.

Much careful work has gone into the preparation of this book, and it possesses the advantage that diagnosis of the malignant conditions is made from necropsy findings. Its great disadvantage, however, is that the groups into which the cases are split up are too small to provide significant evidence for the many suggestions put forward. By far the greater part of Professor Steiner's material is obtained from mixed European stock, and it seems doubtful whether the cases from other races are numerous enough to support the elaborate analysis he has attempted.

Les gastrites

FRANÇOIS MOUTIER, président d'honneur de la Société nationale française de Gastro-Entérologie; ANDRÉ CORNET, médecin-assistant des hôpitaux de Paris. Paris: Masson. 1955. Pp. 404. Fr. 4400.

IN France gastritis has always been a subject of interest and study, and a new major work on this condition coming from that country is of particular importance. Professor Moutier was one of the earliest gastroscopists, and he and his colleagues have based their conclusions very largely upon endoscopic findings.

These, together with histological sections, make up a considerable part of the book, and on these criteria gastritis is classified into acute, subacute, and chronic. The large subacute group is divided into (1) superficial (catarrhal, congestive, and œdematous), (2) ulcerative, of many varieties, and (3) *boutonneuse*. Chronic gastritis is fully treated, including long chapters on the *apogastrites*—a name given by Moutier in 1935 to gastritis occurring in the course of diseases outside the gastro-intestinal tract, such as skin and blood disorders. The authors do not recognise any special precancerous type of gastritis, but take the view that any chronic gastritis may prepare the soil for the development of cancer.

This volume includes a great mass of personal observations on very many cases, as well as some 600 references to other works and over 100 fine coloured and plain illustrations of gastroscopic appearances and microscopic sections. Some may think that the types of gastritis are here almost too sharply defined, but they will none the less be grateful for the careful observations and the care with which they are described.

Pelvo-Spondylitis Ossificans

RAGNAR ROMANUS, M.D., associate professor of general surgery and chief of the surgical outpatient department, Karolinska Sjukhuset, Stockholm; SVEN YDÉN, M.D., roentgenologist, Karolinska Sjukhuset. Copenhagen: Munksgaard. 1955. Pp. 161. Dan. kr. 45.

THE authors review this puzzling disease (usually known in Great Britain as ankylosing spondylitis), largely on a personal series of 250 cases. They have little to say that is new, but give a balanced account of the clinical features, emphasising the importance of the initial sacro-iliac arthritis, the eye changes, and the genito-urinary accompaniments. There are about 70 pages of text and over 70 pages of illustrations, including 229 pictures. Most of these are from X-ray films, and the majority are of attractive clarity. The printing and illustrations show an unusually high standard in book production.

Correlative Neurosurgery

EDGAR A. KAHN; ROBERT C. BASSETT; RICHARD C. SCHNEIDER; ELIZABETH CAROLINE CROSBY, neurosurgical clinic, University of Michigan Medical School. Springfield, Ill.: Charles C. Thomas. Oxford: Blackwell Scientific Publications. 1955. Pp. 413. £7.

THIS book describes the teaching and practice of the neurosurgical clinic of the University of Michigan medical school. The authors were pupils of the late Dr. Max M. Peet, and his influence is reflected in their pages. They have not attempted to write a formal textbook but rather to emphasise the clinical features which they have found useful, and to outline the treatment followed. There are, for example, two interesting chapters on pain and on cerebral abscess from the pen of the senior author. As the title suggests, a particular feature of the book is the fuller discussion of such ancillary subjects as electroencephalography, the use of radioactive isotopes, and endocrinology, and these articles are well written and give a good account of the present position. Several sections on related neuro-anatomy are written by Prof. Elizabeth Crosby, and the young neurosurgeon will find these particularly useful. Their value is enhanced by the particularly large, clear, and well-labelled illustrations.

Segmental Anatomy of the Lungs

A Study of the Patterns of the Segmental Bronchi and Related Pulmonary Vessels. EDWARD A. BOYDEN, PH.D., professor emeritus of anatomy, Medical School, University of Minnesota. New York and London: McGraw-Hill. 1955. Pp. 276. 112*s.* 6*d.*

Professor Boyden has contributed much to our knowledge of the anatomy of the human lung, and it is satisfying to see this work collected under one cover in a comprehensive analysis of the vascular and bronchial patterns. The beautiful illustrations testify to the author's careful labours over a very long period. If the text does not come up to the same high standard, this is largely because his use of terminology which is at variance with that recommended by the International Congress of Oto-Rhino-Laryngology and the Thoracic Society is for most readers a hindrance to understanding. Admittedly, on minor points the international nomenclature might be improved, but its terms have become well established, and their replacement by a numerical system can, we fear, lead only to confusion.

Surgeon at War

Lieut.-Colonel J. C. WATTS, M.C., F.R.C.S., R.A.M.C. London: Allen & Unwin. 1955. Pp. 165. 12*s.* 6*d.*

Colonel Watts has written a straightforward and interesting account of his life as a war surgeon. He has had an unusually varied experience which has included Palestine in 1938, the Western Desert, Syria, Italy, France, and Germany during the war, and Korea. His book reads as though he had written up a diary with the emphasis on making it understandable to a layman. This perhaps accounts for the occasional irritation one feels at his simplified explanations of technical procedures and situations. Those who served in the R.A.M.C. in the theatres which Colonel Watts describes will have scenes and incidents recalled with pleasure, and it should give the non-medical reader an interesting glimpse into the methods and aims of the surgery of warfare. Colonel Watts does not philosophise over his work or his life, but gives it to us straight; and one's only regret is that one learns less about Colonel Watts himself than about what he did and where he found himself. But clearly he enjoyed nearly all of his war and so will nearly all of his readers.

New and Non-official Remedies 1955 (issued by the Council on Pharmacy and Chemistry of the American Medical Association. Philadelphia and London: J. B. Lippincott. Pp. 653. 30*s.*).—The council's annual revision of this useful reference book follows the general pattern of last year's. But in the preface they give warning that future editions will not list the proprietary names of drugs. This change will be made in conformity with the council's decision to end their work of awarding seals to accepted products, so as to give more time to the evaluation of drugs (see *J. Amer. med. Ass.* 1955, **157**, 664).

British Encyclopædia of Medical Practice (2nd ed. London: Butterworth. 1955). *Cumulative Supplement* (Pp. 195. 25*s.*). *Medical Progress* (Pp. 311. 35*s.*). (The two together cost 55*s.*)—Adherents of this encyclopædia will once more welcome these useful reviews of medical practice and research. The two volumes appear under the general editorship of the late Lord Horder.

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THE LANCET
LONDON: SATURDAY, SEPT. 24, 1955

Carcinoma of the Œsophagus

In the first thirty years of this century many surgeons attempted the removal of neoplasms of the œsophagus. From time to time isolated successes were reported; among the most notable were TOREK's [1] patient who survived for thirteen years after the successful construction of an antethoracic gullet, and GREY TURNER's [2] case in which the œsophagus was removed by a pull-through method without opening the chest. But modern surgery of malignant disease of the œsophagus may be said to date from 1938, when both MARSHALL [3] and ADAMS and PHEMISTER [4] reported a case of carcinoma of the lower third of the œsophagus successfully resected via a left thoracic approach, with restoration of continuity by œsophagogastrostomy. In the same year GARLOCK [5] reported 3 cases of excision of the thoracic œsophagus by Torek's technique. Torek's operation was soon abandoned; but never before had more than a single success been reported, and this work provided the crucial stimulus to further advances.

At that time it was believed, largely on the basis of necropsy studies, that carcinoma of the œsophagus was a slowly spreading growth which commonly killed the patient by inanition before distant metastases had arisen, and consequently that the main problem in treatment was to devise satisfactory means of removing the growth and re-establishing normal swallowing. This problem has now been largely solved. By 1942 GARLOCK [6] was able to report 9 cases of carcinoma of the lower œsophagus and cardia treated by partial œsophagogastrectomy through a left lower thoracotomy. This operation is now a standard procedure, though today it is usually performed through an abdominothoracic incision, and is often extended to include removal of the spleen and tail of the pancreas, as recommended by ALLISON and BORRIE.[7] For carcinoma of the mid-thoracic œsophagus SWEET [8] devised high œsophagogastrectomy through the left chest, with an anastomosis above the level of the aortic arch. LEWIS [9] pointed out the advantages of a right-sided approach to this portion of the œsophagus through the right chest, after preliminary mobilisation of the stomach through an epigastric incision. Today this is the commonest technique, but GARLOCK [10] still recommends left thoracotomy for mid-thoracic growths.

Unfortunately the early concept of carcinoma of the œsophagus as a relatively slow-growing tumour was incorrect; at the time of diagnosis, local and metastatic spread is usually more advanced than was formerly believed. BURGESS et al.[11] showed that in squamous-cell tumours there is microscopical evidence of spread in the œsophageal wall for up to 4 cm. beyond the macroscopic edge of the tumour; and GARLOCK and KLEIN [10] suggest that, in order to get clear of this spread, practically all patients with squamous growths require a supra-aortic anastomosis. The frequency of direct spread into adjacent viscera is largely reflected in the low operability-rates, but it is perhaps the high prevalence of lymphatic involvement that most gravely affects the outcome. SWEET [12] studied the lymphatic involvement in 174 operation specimens, and found lymph-gland involvement in 57·5%; the five-year survival-rate in these cases was only 13·5%, compared with 40% in those without lymphatic metastases. Similarly, CAREY and CLAGETT [13] found that of 96 operation specimens of adenocarcinoma of the cardia, 70 (73%) showed involvement of lymph-glands; and of their 11 patients who survived three years or more after resection, only 2 had lymphatic metastases. Further, these lymphatic metastases are often distant from the primary tumour; SWEET [8] found at necropsy of 32 cases of carcinoma of the mid-thoracic œsophagus that in 11 there were deposits in the glands around the left gastric artery. In the light of these facts, and of the anatomical difficulties of really wide excision, it is not surprising that the results of surgical treatment are rather disappointing. Recent reports from three large American centres, while not presenting strictly comparable figures, show that resection of growths of the lower œsophagus and cardia is accompanied by a mortality of about 15%, and that of those surviving operation about 20% live for five years or more; while for growths of the mid-thoracic œsophagus the operation mortality is nearer 25% and the five-year survival-rate only about 5%. These approximations take no account of the operability-rate, which varied from 25 to 40% in the different series, but they give a fairly accurate idea of the trend of results.

GARLOCK and KLEIN [10] have reviewed 457 cases seen by them since 1936. Of these, 451 were submitted to operation; but, except in a few patients with growths of the cardia, resection was undertaken only when it seemed that all growth present could be removed. 214 patients presented with squamous-cell growths; in 91 (42·9%) resection was completed with 35 postoperative deaths (38%). Of those surviving resection 27·2% survived for five or more years without sign of recurrence, but none of those in whom a supra-aortic anastomosis was performed survived for so long. Resection was carried out in 89 (45·4%) of 187 patients with carcinoma of the cardia, with an operation mortality of 24·7%; 33 resections were performed via a thoracotomy incision with 16 deaths (48·4%), whereas in 56 cases an abdominothoracic incision was made, with only 6 deaths (10·7%). Of the 67 patients who survived resection, only 32 were operated on more than five years ago, and of these 5 survived for five years.

In reviewing his material SWEET [14] divides the cases, not by the type of tumour, but by its site. Exploration was undertaken in 182 cases of growth of the mid-thoracic œsophagus; and in 120 resection was performed, with anastomosis usually above the aortic arch; in many cases the operation was purely palliative. Of these 120 patients, 30 died as a result of the operation, and 4% survived for five years or more; of those in whom at the time the operation was deemed "curative," 14% survived for five years. Exploration was carried

1. Torek, F. *Surg. Gynec. Obstet.* 1913, **16**, 614.
2. Grey Turner, G. *Lancet*, 1933, ii, 1315.
3. Marshall, S. F. *Surg. Clin. N. Amer.* 1938, **18**, 643.
4. Adams, W. E., Phemister, D. B. *J. thorac. Surg.* 1938, **7**, 621.
5. Garlock, J. H. *Surg. Gynec. Obstet.* 1938, **66**, 534.
6. Garlock, J. H. *Ibid*, 1942, **74**, 555.
7. Allison, P. R., Borrie, J. *Brit. J. Surg.* 1949, **37**, 1.
8. Sweet, R. H. *New Engl. J. Med.* 1945, **233**, 1.
9. Lewis, I. *Brit. J. Surg.* 1946, **34**, 18.
10. Garlock, J. H., Klein, S. H. *Ann. Surg.* 1954, **139**, 19.
11. Burgess, A. M., Baggenstoss, A. H., Moersch, H. J., Clagett, O. T. *Surg. Clin. N. Amer.* 1951, **31**, 965.
12. Sweet, R. H. *Surg. Gynec. Obstet.* 1952, **94**, 46.
13. Carey, J. M., Clagett, O. T. *Ann. Surg.* 1955, **142**, 2.
14. Sweet, R. H. *J. Amer. med. Ass.* 1954, **155**, 422.

out in 242 cases of carcinoma of the lower œsophagus or cardia. In 167 of these resection was performed, with 20 (12%) postoperative deaths and 17% five-year survivals; the five-year survival-rate after "curative" (as opposed to "palliative") resection was 34%.

CAREY and CLAGETT [13] have reported on 475 patients with malignant disease of the lower œsophagus and cardia seen at the Mayo Clinic since January, 1945. Of these 219 were, for various reasons, considered inoperable on clinical grounds. Exploration was carried out in 256 cases, with resection, sometimes only palliative, in 131 instances. Of these 131 patients, 22 (16·7%) died after operation, the commonest cause of death being an anastomotic leak. Of the 45 patients who underwent resection more than five years ago 11 survived. In this series the results were better in patients with squamous-cell tumours of the lower œsophagus than in those with adenocarcinoma of the cardia, whereas SWEET [11] found that there was no significant difference in the prognosis of these two conditions.

It would be unrealistic to judge the success of resection solely by the proportion of patients who survive for five or more years without recurrence: note must also be taken of the extent to which distressing symptoms are relieved. In its terminal stages untreated carcinoma of the gullet is a terrible disease, the patient being unable to swallow even his own saliva. DICKISON [15] reported on 50 cases of carcinoma of the œsophagus treated by palliative gastrostomy. Of these, 23 died in hospital; and the average survival-time of the whole group was a hundred and twenty days, during which time their distress was, if anything, greater than before operation. Similarly CAREY and CLAGETT [13] report that of their patients who had inoperable growths at exploration, 88% died within a year, and 97% within eighteen months. In comparison with this, patients who survive even a palliative resection can usually swallow in comfort until distant metastases bring about their death, and many of them survive in comfort for many months. SWEET [14] reports that of 90 patients who survived resection for neoplasms of the mid-thoracic œsophagus, 58% were alive at twelve months and 26% at two years; while of 147 patients who survived resection of growths of the lower œsophagus and cardia, 87% were alive at twelve months, 63% at two years, 47% at three years, and 36% at four years. Thus, resection of an œsophageal neoplasm with œsophagogastric or œsophagojejunal anastomosis, even if it does not lead to cure, provides useful palliation. But the operation is severe and technically exacting: the published mortality-rates reflect the efforts of experts, not of the average surgeon. In addition, some—probably most—of those who survive the operation suffer discomfort from reflux œsophagitis, and unfortunately accurate information about this complication is scarce. In the light of these considerations BERMAN [16] concludes that the aim of surgery should be to enable the patient to swallow comfortably by the simplest possible method. For the palliation of stenosing carcinoma of the œsophagus Dr. COYAS, whose article appears on p. 647 of this issue, introduces a 'Polythene' tube under general anæsthesia. BERMAN [16] excises the affected portion of œsophagus and replaces it with a polythene tube, which becomes surrounded by a fibrous sheath later lined by epithelium growing in from each end. He describes 60 cases treated in this way. 5 patients died after the operation, but the remaining 55 were enabled to swallow comfortably and peptic œsophagitis developed in none. This operation has the great advantages that it is simple and can be applied to growths at all levels in the œsophagus. It is too early to assess its true worth, but it may be found to offer greater palliation than resection and anastomosis. Similarly the palliative value of radiotherapy may have been underestimated in the enthusiasm for surgical resection. BUSCHKE [17] has reviewed the results of radiotherapy in carcinoma of the œsophagus. From his figures it seems probable that for mid-thoracic growths, especially when large, radiotherapy gives at least as good palliative results as surgery. For growths in the upper thoracic and cervical œsophagus—an uncommon situation—radiotherapy may be the treatment of choice, for surgical extirpation of such lesions is necessarily very restricted and involves complicated procedures to restore continuity. There is no great hope that the diagnosis will be made at an earlier stage than at present. Though occasional patients have unusual presenting symptoms,[18] in the majority dysphagia is the first and main symptom. The possible significance of dysphagia or any discomfort in swallowing is now widely recognised, as is the need to investigate patients with these symptoms by barium-swallow and œsophagoscopy; but only too often by the time the patient consults a doctor the disease has spread beyond the limits for possible cure.

At present resection and anastomosis seems to be the treatment of choice for growths in the cardia and lower thoracic œsophagus. For apparently curable growths in the mid-thoracic œsophagus, œsophagogastrectomy with œsophagogastric anastomosis is probably best; but with more advanced lesions in this region it seems that the insertion of a polythene tube or, alternatively, radiotherapy may have at least as strong a palliative effect.

Sexing Nuclei

IN the past year there has been steady progress in the application of BARR's [19] discovery that genetic sex can be determined by examination of the nuclei of a skin biopsy.[20] Many centres are now practising the method; in this country alone at least seven groups [21–27] have described observations on it.

Its practical value has been best established in cases of doubtful sex, and most of all in the newborn. In the adult there are many important considerations besides the true sex: often enough the social pattern is too well established to be disturbed, and it is better to leave well, or even moderately ill, alone, lest worse befall. But the newborn infant whose external genitalia are equivocal presents the problem at a stage where it is still simple enough for the right answer to be sought and acted on. It is not so very rare a problem. A wrong decision may be disastrous, delay

15. Dickison, J. C. *Canad. med. Ass. J.* 1951, **65**, 35.
16. Berman, E. F. *Surgery*, 1954, **35**, 822.
17. Buschke, F. *Amer. J. Roentgenol.* 1954, **71**, 9.
18. Wohl, G. T., Pastor, B. H., Karr, S. L. *New Engl. J. Med.* 1955, **252**, 702.
19. Moore, K. L., Graham, M. A., Barr, M. L. *Surg. Gynec. Obstet.* 1953, **96**, 641. Barr, M. L. *Ibid*, 1954, **99**, 184.
20. See *Lancet*, 1954, ii, 638.
21. Polani, P., Lennox, B., Hunter, W. F. *Ibid*, p. 120.
22. Emery, J. L., McMillan, M. *J. Path. Bact.* 1954, **68**, 17.
23. Rannie, I., Erskine, C. A. *Lancet*, 1954, ii, 1176.
24. Russell, A., Levin, B., France, N. E. *Proc. R. Soc. Med.* 1955, **48**, 318.
25. Cruickshank, D. B. *Lancet*, 1955, i, 253.
26. Bromvich, A. F. *Brit. med. J.* 1955, i, 395.
27. Armstrong, C. N. *Ibid*, p. 1173.

hardly less so. There is not only that straw in an ill wind, the wrong naming of the child, and the long train of social and psychological evils of which it is the harbinger, but the more immediate risk of missing congenital adrenal virilism; for such a child may be brought to normality or near normality with cortisone, but without it may die in an adrenal crisis.

In the past the diagnosis was commonly sought by laparotomy; but this is a large undertaking and it may give equivocal results.[26] Estimation of urinary ketosteroids may reveal the adrenal cases, but because the amount of steroid is small the technical difficulties are considerable. Nuclear sexing disturbs the patient little and gives an answer which is, or should be, clear and unequivocal. In some cases maladjustment will no doubt declare itself later, but probably the damage is least if newborn intersexes are treated at once and as radically as necessary according to their nuclear sex. There is one group of intersexes to which this does not apply. In males in whom there is gross early failure of the embryonic testis, development proceeds so far in the direction of a feminoid structure that no grounds for suspicion of the sex exist at birth. By the time the condition is far enough advanced to be diagnosed (usually not before puberty, and never, so far as we know, before the age of seven or eight years) by means of the concomitant stigmata of Turner's syndrome, the feminine status is so far established that it would be foolhardy to alter it. The status in full-blown Turner's syndrome (feminine dwarfs with webbed necks and cubitus valgus, "ovarian" agenesis, and, in about half the cases, coarctation of the aorta) is beyond doubt. Since the first observation last year[21] it has been confirmed from several sources,[24 28 29] and POLANI and LENNOX reported to the Medical Research Society in March further confirmation based on a series of sixteen cases in all. Some confusion exists on two points: the "webbing syndrome" (status Bonnevie-Ullrich) can occur without gonadal agenesis, and such patients may be ordinary males or females.[24] EHRENGUT[29] suggests that the females can be distinguished from cases of Turner's syndrome even before puberty by their normal-sized chests (otherwise such distinction is impossible without skin biopsy or laparotomy). Further, gonadal agenesis can occur without the other stigmata of Turner's syndrome. In theory, gonadal agenesis might be expected to be equally frequent in genetic females and genetic males, though the phenotype in each case will be feminine. True female ovarian agenesis seems, however, to be less common than might be expected. RANNIE and ERSKINE[23] describe a case; WILKINS et al. and EHRENGUT both mention cases, but give so little detail that assessment is impossible; POLANI and LENNOX have seen none.

BARR and his school have continued to enlarge our knowledge of the scope of the method of sexing. Thus MARGARET GRAHAME (one of the workers who introduced the subject to clinicians in 1953) has shown by careful studies in the cat[30] that the sex chromatin can be recognised in the early embryo, before gonads are differentiated. Besides its obvious use in sexing embryos (a similar method has apparently already been used for this purpose in insect larvæ) this adds more evidence, if any were needed, that the sex chromatin is a genetic marking, independent of the hormonal status at the earliest phase—though no-one has yet sought it in the ovum and the fertilised egg or its first-division products. There are also brief reports from the same school on freemartins,[31] on pseudohermaphrodites[32] (enlarging the original series[19]), and on benign tumours.[33 34] EMERY and MCMILLAN[22] (who appear to have been the first to use the method in this country) have contributed useful data on the possibility of sexing post-mortem tissues. POLANI and MAGNUS[35] have compared the nuclear sex with the cholinesterase content of skin. The observation by HUNTER and LENNOX[36] on the occurrence of female nuclei in some teratomas in males has been confirmed by CRUICKSHANK,[25] TAVARES,[37] and MOORE and BARR.[34] CRUICKSHANK reported one case and TAVARES four cases of teratomas with female nuclei in male patients. TAVARES points out that the ratio of male to female teratomas in published cases in man is very nearly 50 : 50. If this is confirmed by further series we shall have a firm basis for speculation on the origin of the teratomas; but it would perhaps be wise to be patient for a little longer before committing ourselves here.

The latest contribution, which may be of great importance in practice, is MOORE and BARR's description[38] of a method of sexing depending on scrapings of the oral mucosa, which provides a film of cells similar to those so familiar to the exfoliative cytologist in vaginal smears. Even the minor discomfort of a biopsy is worth avoiding if possible, but hitherto it has been avoidable only by DAVIDSON and SMITH's[39] polymorph method using blood-films. This requires much experience of the vagaries of polymorph nuclei before it can be practised with any confidence, and though it has proved highly reliable in the hands of its originators no-one else has yet adopted it with equal success. The oral-mucosa method, though probably it will be found to have drawbacks of its own, is at the very least a valuable alternative.

The clinician, considering which method to turn to, will be well advised to regulate himself according to his microscopist. None of the methods is really easy: each demands a high level of staining technique, skilful use of the optical resources of the microscope, and some experience. The histopathologist or histologist will be happiest with the biopsy technique, the hæmatologist with the blood-film, the exfoliative cytologist with smears of oral mucosa. Those whose command of all three disciplines is good enough for them to be reliable exponents of three methods will be rare—and perhaps too busy to practise this somewhat exasperating art. That different microscopists should practise different methods is of value, for it enables the clinician to obtain a cross-check in cases where the decision as to sex is particularly important.

28. Wilkins, L., Grumbach, M. M., Van Wyk, J. J. *J. clin. Endocrin.* 1954, **14**, 1270.
29. Ehrengut, W. *Münch. med. Wschr.* 1955, **97**, 162.
30. Grahame, M. A. *Nature, Lond.* 1954, **173**, 310; *Anat. Rec.* 1954, **119**, 469.
31. Moore, K. L., Grahame, M. A., Barr, M. L. *Anat. Rec.* 1955, **121**, 442.
32. Barr, M. L. *Ibid*, p. 387.
33. Moore, K. L. *Ibid*, p. 409.
34. Moore, K. L., Barr, M. L. *Brit. J. Cancer*, 1955, **9**, 246.
35. Polani, P. E., Magnus, H. A. *Lancet*, 1955, **i**, 1202.
36. Hunter, W. F., Lennox, B. *Ibid*, 1954, **ii**, 633.
37. Tavares, S. *Ibid*, p. 948.
38. Moore, K. L., Barr, M. L. *Ibid*, July 9, 1955, p. 57. See also Marberger, E., Bousbella, R. A., Nelson, W. O. *Proc. Soc. exp. Biol., N.Y.* 1955, **89**, 488.
39. Davidson, W. M., Smith, D. R. *Brit. med. J.* 1954, **i**, 1379.

Annotations

PITFALLS IN THE CARE OF THE CARDIAC PATIENT

SOME of the common mistakes in managing cases of heart-disease have been set out by Dr. Samuel Levine,[1] of Boston. Levine remarks that three main questions have to be answered: has the patient organic heart-disease; if he has organic heart-disease, has he cardiac failure; and is there something unusual about the type of heart-disease that calls for special or specific treatment beyond the routine use of digitalis and mercurial diuretics?

Whether organic disease is present is learnt from the history and from clinical examination supported by special investigations. Much devolves on the patient's account, because the reliable signs in the heart which indicate organic disease are limited to abnormalities in the volume of the pulse, diastolic murmurs, cardiac enlargement, and definite changes in the contour of the heart on fluoroscopy and in the electrocardiogram; systolic murmurs and almost all the arrhythmias may occur without a significant organic lesion. Breathlessness is a common symptom of heart-disease but must be distinguished from functional dyspnœa and that caused by emphysema and chronic bronchitis. In functional dyspnœa respiration usually has a "sighing" quality, and the patient complains of inability to get enough air into the lungs despite having inhaled three or four times the amount he needs. Functional dyspnœa also occurs characteristically when the patient is at rest. Dyspnœa due to emphysema and chronic bronchitis is worse in the winter, is aggravated by foggy weather, is often associated with small repeated hæmoptyses, and is accompanied by prolonged expiration and squeaking disseminated râles without signs of heart-disease. Pain or discomfort in the chest poses many diagnostic problems, and much help is derived from analysing this symptom according to Ryle's[2] ten points: situation, localisation, radiation, character, duration, frequency, aggravating factors, relieving factors, special times of occurrence, and associated symptoms. Applied unhurriedly and with sympathy this catechism will almost always distinguish between pain due to functional causes and that due to organic causes, and between pain due to ischæmic heart-disease, hiatus hernia, gall-bladder disease, pulmonary embolism, and dissection of the aorta (in which the pain is often felt between the scapulæ and in the centre of the back of the throat and radiates up the back of the neck). Not infrequently ischæmic heart-disease and gall-bladder disease or hiatus hernia are combined in the same patient: treatment of the abdominal condition may lessen the severity of the angina, but it will seldom, if ever, dispel it.

In deciding whether a patient has cardiac failure, except for a presystolic gallop-rhythm (equivalent in rhythm to Tënnĕs-sēē) little is to be learnt from examination of the heart itself. More reliable evidence is given by the presence of pulsus alternans, increased jugular venous pressure, basal crepitations, hepatomegaly, and dependent œdema of sacrum or ankles (not forgetting that enlargement of the liver or œdema may be due to many conditions other than heart-failure). Radiography of the lungs may show hilar congestion, indicating left-sided heart-failure, in the absence of adventitious signs in the lungs; the circulation-time may be prolonged (as it may be also in the absence of failure if the heart is enlarged); and the vital capacity of the lungs is reduced. A history of shortness of breath on lying down at night, or of insomnia relieved by sleeping in an armchair, indicates left-sided heart-failure, just as heaviness or tightness under the right costal margin on exercise may signify hepatic congestion due to right-sided failure. In the absence of heart-failure, restrictions and the exhibition of digitalis often make the patient physically and mentally worse, and may engender a cardiac neurosis more disabling than the underlying organic disease.

Because of recent advances it is more than ever essential that uncommon forms of cardiac disease should not be overlooked. Conditions now amenable to surgery include patent ductus, coarctation of the aorta (palpation of the femoral arteries should be part of the routine examination), septal defects, pulmonary stenosis, arteriovenous fistulæ, and constrictive pericarditis (which in older patients is liable to be misdiagnosed as ischæmic heart-disease and should be suspected if the evidence is equivocal and there is gross elevation of the jugular venous pressure, a diastolic thrust at the apex, and disproportion between the amount of ascites and the degree of ankle œdema). Medical conditions causing heart-failure which may be cured by specific medical treatment include hyperthyroidism (which is often overlooked in older patients whose only clinical manifestation of thyroid over-activity may be heart-failure and auricular fibrillation), severe anæmia (the significance of which may not be sufficiently appreciated if the patient has in addition some other more common cause for heart-failure), beriberi (which is rare in Great Britain and is found more often in food faddists than in alcoholics), and cardiac arrhythmia in an otherwise normal heart (in such cases normal rhythm and compensation may be restored by procainamide or quinidine).

Finally Levine reminds us that œdema unresponsive to mercurial diuretics may be eliminated by giving in addition ammonium and potassium chloride—the chloride to correct the hypochloræmic alkalosis which is an undesirable side-effect of mercurial diuretics, and the potassium to correct the potassium depletion in heart-failure which also increases the liability to toxic side-effects from digitalis. Responsiveness to mercurial diuretics may also be restored after paracentesis of ascites or acupuncture of the legs. Levine's last plea is for the avoidance of bed rest in the treatment of cardiac patients, unless they are shocked or so lightheaded or weak that they cannot sit up. The work of normal and diseased hearts is 23% greater when the patient is in bed than when he is in a chair with his feet down; lying down the patient is mentally and physically less at ease, and is exposed to increased liability to thrombophlebitis.

1. Levine, S. A. *Ann. intern. Med.* 1955, **42**, 1270.
2. Ryle, J. A. Natural History of Disease. London, 1948.

INVESTIGATIONS ON THE PROSTATE

IT is twenty years since Rich[1] and Moore[2] drew attention to the fact that the prostate glands from elderly men, examined at necropsy or after surgical removal, show histological evidence of carcinoma which has caused no apparent harmful effects. The frequency of such a finding depends very largely on the care with which the tissues are examined. Baron and Angrist[3] studied two series of cases. In the first, examined by cutting one and occasionally more random sections, they found 54 examples of cancer among 364 cases; but when they examined a further 50 cases by cutting serial "step" sections they demonstrated cancer in 22. More recently Franks,[4] also by means of step sections has found 69 carcinomas in a series of 178 cases.

The existence of this surprisingly high prevalence of histologically demonstrable carcinomas in old men is now accepted by most observers. But the knowledge has proved of little practical value to clinicians. So long as the prostate remains in situ all is well, for the patient has no symptoms of malignant disease. Should the discovery be made after surgical removal the problem is somewhat different. The surgeon will probably decide

1. Rich, A. R. *J. Urol.* 1935, **33**, 215.
2. Moore, R. A. *Ibid*, p. 224.
3. Baron, E., Angrist, A. *Arch. Path. (Lab. Med.)* 1941, **32**, 787.
4. Franks, L. M. *J. Path. Bact.* 1954, **68**, 603. See *Lancet*, 1954, ii, 1064.

to treat his patient with œstrogens, and for this reason experimental work by Lasnitzki [5] showing the effect of œstrone on mouse prostate is of some interest.

It was found that with explants of prostate tissue from young animals (6 weeks) small doses of œstrone stimulated epithelial growth with hyperplasia in some acini. As the dose was increased, atrophy and squamous metaplasia resulted. Œstrone applied to prostatic organ-cultures from older animals (6 months) always produced atrophy of epithelial elements with considerable stromal hyperplasia. The picture closely resembled the hypertrophy of the fibromuscular stroma in elderly men. Lasnitzki suggests that the alteration in response with ageing may be due to the higher level of androgen present in older animals. It has been shown [6 7] that the interaction of androgen and œstrogen may be antagonistic or synergistic according to the relative amounts of hormones present. Thus it seems possible that in older mice when exposure to androgens has been continued for a longer period there may be an antagonistic response to œstrogen, causing atrophy of epithelium and proliferation of stroma; whereas in young mice a similar dosage might evoke a synergistic effect with stimulation of epithelial growth.

EXCRETION OF CHORIONIC GONADOTROPHIN

THE excretion of chorionic gonadotrophin, even in normal pregnancy, varies considerably between one patient and another; and this accounts mainly for the difficulty of recognising abnormal levels. Hobson,[8] at the University of Edinburgh pregnancy diagnosis laboratory, has estimated urinary excretion of chorionic gonadotrophin by the Hogben dilution test.

The dilutions most commonly used were 1 in 10 and 1 in 100. Positive reactions with these dilutions correspond to a concentration of chorionic gonadotrophin of not less than 30,000 and 300,000 I.U. per litre. Positive results with a dilution of 1 in 10 were obtained in normal pregnancies right up to term, though the proportion positive was very much lower in the second than in the first half of pregnancy. Between the 5th and 14th week of pregnancy it was not uncommon for the tests to be positive with 1 in 100 dilution, even when the pregnancy was quite normal; but in only 3 out of 632 normal pregnancies was the result positive with a dilution of 1 in 150, and 2 of these 3 were multiple pregnancies.

In about half of 67 cases of hydatidiform mole excretion of chorionic gonadotrophin fell within the range for normal pregnancy. In half of the remaining cases (that is, a quarter of the total cases of hydatidiform mole examined before evacuation of the mole) the result was positive with dilutions of 1 in 100. In the remaining quarter of the 67 cases the result was positive with a dilution of 1 in 200 or higher—dilutions at which the result was positive in no normal case. It would seem, therefore, that particularly after the 14th week of pregnancy, a positive reaction with a dilution of 1 in 200 or higher indicates hydatidiform mole. Positivity with a dilution of 1 in 10 is of no diagnostic value because this is found in a small proportion of normal pregnancies right up to term. Tests positive with a dilution of 1 in 100 are equivocal, for now and then, and particularly in the first three months of pregnancy, such a positive result may be obtained even though the pregnancy is quite normal.

Clearly the clinician should be wary about diagnosing hydatidiform mole from this test where it is positive only in dilutions under 1 in 200, lest he terminate a normal pregnancy. In such cases he must rely on careful examination, which should include bimanual examination for fœtal parts and radiography with the patient so positioned that any fœtal shadow is cast clear of the bony pelvis—perhaps through the greater sciatic notch. In some cases repeated radiographic examination is required. Even when the clinician is convinced of the diagnosis a further check is still possible before the hydatidiform mole is evacuated: once the cervix has been carefully dilated a further bimanual examination can be made, this time with a finger through the cervix allowing direct palpation of the lower pole of the uterine contents. In at least one case where hydatidiform mole had been mistakenly diagnosed the error was discovered in this way by palpating the membranes and, through them, the fœtal parts. In this case the operation was stopped and the pregnancy continued to term.

5. Lasnitzki, I. *Cancer Res.* 1954, **14**, 632.
6. De Jongh, S. E. *Ned. Tijdschr. Geneesk.* 1934, **78**, 489.
7. Laqueur, E. *Arch. Sci. biol., Napoli*, 1933, **18**, 220.
8. Hobson, B. M. *J. Obstet. Gynæc., Brit. Emp.* 1955, **62**, 354.

PSEUDOMEMBRANOUS ENTEROCOLITIS

Dawson-Edwards and Morrissey [1] observe that in clinical practice the diagnosis of pseudomembranous enterocolitis is only presumptive; for the diagnosis can be confirmed only from necropsy appearances unless shreds of membrane or necrotic mucosa are found in the fæces. They review 35 cases of severe diarrhœa starting in the first eight days after partial gastrectomy. These cases arose among 1700 patients submitted to this operation in a seven-year period; more patients had diarrhœa, but analysis of these further cases proved impossible because the records were incomplete. In 22 of the 35 the disease was classified as "mild," since no systemic upset ensued. Of the remainder 8 were severely ill and 5 died; the diagnosis was confirmed at necropsy in these 5 and clinically in a further patient who recovered after passing greyish-white membrane. Diagnostic difficulty is greatest in the "mild" group; for post-gastrectomy steatorrhœa may give rise to acute diarrhœa towards the end of the first postoperative week (by which time the patient is already taking appreciable amounts of fat, owing to the prevalence of milk in the diet at this stage). Dawson-Edwards and Morrissey indicate that gastro-enteritis from bacterial contamination of food is a further possible cause of diarrhœa after the operation.

That the evidence suggesting infective causes of pseudomembranous enterocolitis [2] is not more abundant may be due to the fact that most hospital laboratories are not equipped to search for unusual organisms or their toxins. How many hospital laboratories, for instance, could undertake agglutination tests for the epsilon toxin of *Clostridium welchii* type D in a patient's serum? To demonstrate the presence of staphylococci pathogenic within the gut, Dearing and Heilman [3] needed to enrich their media with 0·25% phenylethyl alcohol so as to discourage the growth of other organisms. Are the proper selective media always to hand? Dack, who has done much to incriminate the staphylococcus in cases of food-poisoning, has now taken up the cudgels as regards enterocolitis.[4] In staphylococcal food-poisoning death is rare, as is systemic collapse; could the micrococci therefore be responsible also for a condition as severe as this? Working on the hypothesis that staphylococcal food-poisoning is due mainly to a limited dose of enterotoxin, since the bacteria do not appear to multiply after ingestion, in contrast to enterocolitis when there may be continuing production of toxin due to active growth of the organisms in the gut, Surgalla and Dack set out to prove that staphylococci obtained from the fæces of 32 patients with diarrhœa during a course of antibiotic produced enterotoxin. Fluid from cultures was fed to rhesus monkeys; if for each sample 2 out of 4 monkeys were provoked to vomit, toxin was considered to be present. By this criterion staphylococci capable of

1. Dawson-Edwards, P., Morrissey, D. M. *Brit. J. Surg.* 1955, **42**, 643.
2. *Lancet*, 1954, ii, 228; *Ibid*, 1955, i, 300.
3. Dearing, W. H., Heilman, F. R. *Proc. Mayo Clin.* 1953, **28**, 121.
4. Surgalla, M. J., Dack, G. M. *J. Amer. med. Ass.* 1955, **158**, 649.

producing enterotoxin were found in 30 of the 32 patients. Surgalla and Dack conclude that, whereas in food-poisoning toxin is developed in the food before ingestion and not afterwards, in enterocolitis toxin production persists within the body as long as competing members of the gut flora are suppressed by continued antibiotic therapy.

RENAL COMPLICATIONS OF BATTLE INJURIES

CHANGES in renal function are part of the normal reaction to severe injury and result in oliguria with temporarily increased excretion of potassium, nitrogen, phosphorus, and sulphur, and reduced excretion of sodium and chloride. True renal failure is, however, a rare complication of injury; and it is seldom diagnosed at an early stage, possibly because its most obvious early indication—reduction in the volume of urine—coincides in time with the oliguria which normally follows severe injury. True renal failure after injury is very commonly fatal. Beecher [1] reported a mortality-rate of 65% in 78 patients with this complication. Only 47% of those with oliguria died, compared with 91% of those with anuria; in this series 94% of the deaths occurred within ten days of the injury. Of 100 fatal cases reported by Lucké,[2] 74 of the deaths occurred within eight days of injury. With improved understanding of the disorders which accompany acute renal failure the futility of attempts to bring about diuresis by massive intravenous infusions has been recognised, and accordingly the incidence of waterlogging has been reduced. In addition, potassium intoxication is now recognised as the commonest single factor in bringing about death, and measures to remove potassium from the extracellular fluid are widely, though not always successfully, practised.

The management of the primary injury is greatly impeded by acute renal failure. This is well illustrated by Balch et al.,[3] who discuss the surgical care of 37 patients admitted to a renal centre established in Korea in 1953. 2 of their patients had been injured in road accidents, 1 was severely burned, and the remainder had suffered wounds due to various types of missile. Resuscitation and primary operation had been carried out in other surgical units, and the patients were evacuated by air to the renal centre when renal failure was suspected because urinary output had fallen below 500 ml. per twenty-four hours although the systolic blood-pressure exceeded 90 mm. Hg. In the renal centre fluid intake (excluding transfused blood) was restricted to 500–800 ml. per day beyond a volume equal to the fluid output. It was found that the plasma-potassium level tended to fall when a sodium deficit was made good, or after the administration of hypertonic glucose solution with insulin; administration of calcium reduced the clinical effects of a high extracellular-potassium level without altering the plasma-potassium level. Dialysis was employed when these measures failed. In 18 of the 24 oliguric patients dialysis was applied, usually more than once, and 6 survived. Balch et al. emphasise that such special treatment for acute renal failure will not avail in the presence of other complications such as infection, especially of dead muscle. Of 16 patients in whom the plasma-potassium level exceeded 6 m.eq. per litre 11 were submitted to dialysis and only 2 survived, but Balch et al. believe that the elimination of the renal factor by dialysis reduced the mortality-rate and may have prolonged survival in some who died. When dialysis corrected the biochemical alterations in the extracellular fluid but the clinical manifestations of "uræmia" persisted, it was found that some other cause, such as sepsis, was responsible for the persisting symptoms and clinical disturbance. Of the 37 patients, 24 were oliguric and 18 (75%) of these died; of 13 who were not oliguric 8 (62%) died. The average day of death was 8 in the oliguric group and 6 in the non-oliguric patients. Balch et al. make clear the initial difficulty of early diagnosis of renal failure and emphasise that the general policy was to avoid moving hypotensive patients from surgical units to the renal centre. Nevertheless 9 patients with persistent hypotension were evacuated to the centre because of oliguria; oliguria persisted after resuscitation in 3 of these, and 2 others could not be resuscitated. That only 3 of these 9 patients survived for more than two days and only 2 recovered is some indication of the grave condition of the patients, but also raises the question whether they should have been moved at all; 6 of them had sustained extensive abdominal injuries.

In this series the primary cause of death was established in 21 out of 26 cases. In 11 this was infection of some kind, and in 7 of these cases there was evidence of more or less extensive myositis. Myositis occurred in 18 of the 37 patients, and the need to reamputate or excise extensive areas of necrotic muscle in both the illustrative cases cited in the report implies that primary wound treatment was inadequate.

The kind of severe bodily disturbance described in this report is not uncommon also in civilian injuries, and its treatment demands a high degree of surgical skill and knowledge. That such patients survive at all is due to the efforts of those responsible for the primary treatment. Balch et al. emphasise that their studies have cast no new light on ætiology, but they note the importance of the high incidence of infection. The early complete excision of all dead and damaged tissue until only quivering bleeding muscle remains, and the decompression of through-and-through limb wounds by division of fascia and the removal of foreign bodies, have been the foundations of successful early surgery in both world wars; the part played by the antibiotics is valuable but secondary. A significant infection occurred in 83% of the oliguric and in 63% of the non-oliguric patients of this series. Severe infection may have a noxious effect on the circulatory system as well as on renal function.

1. Beecher, H. K. The Physiologic Effects of Wounds. Washington, D.C., Office of the Surgeon-General, Department of the Army, 1952.
2. Lucké, B. *Milit. Surg.* 1946, **99**, 371.
3. Balch, H. M., Meroney, W. H., Sako, Y. *Surg. Gynec. Obstet.* 1955, **100**, 439.

COMICS

IN *British Comics: an Appraisal* [1] the "Comics" Campaign Council examines the contents of existing "comics" and puts forward some useful suggestions for their future development. The council lacks neither sympathy nor insight. "If," it says, "many comics are studied, certain recurring themes can be noted: children having adventures on their own, children coming to the rescue of adults, adults making erroneous decisions, adults who are unkind to children meeting disaster, and so on. Adults enjoy a funny picture of a tiresome child, children enjoy funny pictures of tiresome adults even more. Children have to put up with so much correction from adults; we should not forget the burden of frustration which we have to put upon them. Many of the situations in comics are as improbable as day-dreams, but this does not bother the children any more than the improbabilities of an adult cartoon bother the adults." Something like 350 million comics are bought annually by our children; and it is believed that on an average each comic bought is seen by eight children. The council does not hazard an estimate of the number of adult readers.

THE Fédération Internationale Pharmaceutique is holding its 16th general assembly in London this week under the presidency of Sir Hugh Linstead, M.P. At the opening meeting on Monday Mr. Iain Macleod, on behalf of the Government, and Mr. H. Steinman, on behalf of the Pharmaceutical Society of Great Britain, welcomed over 1000 delegates from 46 countries.

1. Edited by Miss P. M. Pickard. Obtainable from the secretary of the council, Dr. S. Yudkin, 23, Tillingbourne Gardens, London, N.3. Pp. 32. 1s. 7½d. post free.

Special Articles

PSYCHOSOMATIC PROBLEMS IN POSTURAL RE-EDUCATION *

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B.M. Oxfd

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MOST of us, I think, are thoroughly dissatisfied with the results of posture training, whether it be carried out by the physical educationists or as remedial work. The incidence of defects in so-called "normals" is tremendous. The White House Conference put it as high as 75% of adolescents: my own figure, based on over 500 students and members of the Armed Services, male and female, is higher than this. Of those who do make some initial improvement during the usual posture training, very few seem to want to maintain it after supervision has been stopped. This is partly because the wrong things are taught, and partly because of a quite wrong conception of the actual training process—the accent usually being on *instructing* the patient, instead of on how he is to *learn* something new. It is one thing to be instructed: quite another to change habits and learn.

Postural Homœostasis

In view of the undoubtedly unsatisfactory results of postural re-education, I suggested a few years ago (Barlow 1952) that we should try to get rid of the usual idea of posture as being some fixed static position, which could either be good or bad, right or wrong; and, if bad and wrong, then caused by weakness of certain muscles, which needed strengthening through admonition, static holdings, and stretching and strengthening exercises. Instead I suggested the term "postural homœostasis," in order to give the idea of

(a) (b)

Fig. 1—Recording of a pin-point of light fixed to the top of the head, illustrating postural sway in (a) a normal person, and (b) a neurotic.

change and lack of fixity. I should like to elaborate this idea of postural homœostasis, on which my approach to postural re-education is based.

A homœostatic system is one which returns to a resting state of equilibrium when it is disturbed, and postural adjustment is a homœostatic mechanism which is largely under voluntary control, provided that the right amount of information about errors finds its way back from the muscle to the cortex.

Fig. 1 shows two recordings of a pin-point of light fixed to the top of the head and photographed from above. In well coördinated people (*a*) there is always a slight sway, around a resting mid-point, never excessive. Neurotics, however, show very great sway (*b*), that is to say, oscillation away from the resting state. Owing to their faulty postural awareness, certain muscles are held habitually in an over-tense condition, thereby upsetting the homœostatic equilibrium. Owing to the muscular imbalance, oscillations tend to be excessive.

* From an address given to the Chartered Society of Physiotherapy at the Cowdray Hall, London, in March, 1955.

Fig. 2 is an electromyogram (E.M.G.) of the right and left erector spinæ muscles in someone suffering from a slight lateral curvature. In A the left side of the back shows considerably more activity than the right, although the patient, who is sitting comfortably at rest, is unaware of this fact. The detection of error is not accurate, and this is responsible for the postural deformity. When the patient moves as in B, there is much activity on the left side. In C, when the patient is adjusted in a manner which I will describe later, the undue tension

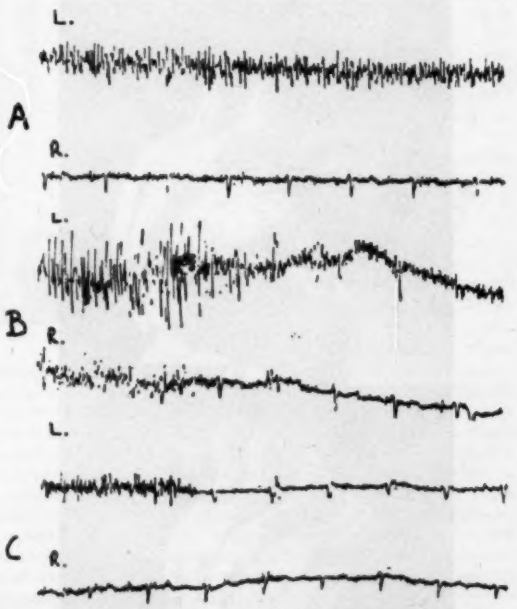


Fig. 2—Electromyogram of right and left erector spinæ muscles in subject suffering from slight lateral curvature of the spine.

in the left side disappears. This example is a prototype for postural defects, showing the association of faulty posture with maldistributed tension. The patient is unaware of the increased muscle tension, possibly (as I have suggested elsewhere, Barlow 1954) because over-contraction of a muscle diminishes muscle-spindle activity, so that, in current jargon, there is an absence of "feed-back"—i.e., information about the degree of postural error is not fed-back to the brain. Fig. 9 (p. 662) is another example of this inability to recognise errors of tension and to return to a balanced resting state.

The E.M.G. there illustrated was taken from the trapezius muscle of a violinist who consulted me because the muscles of

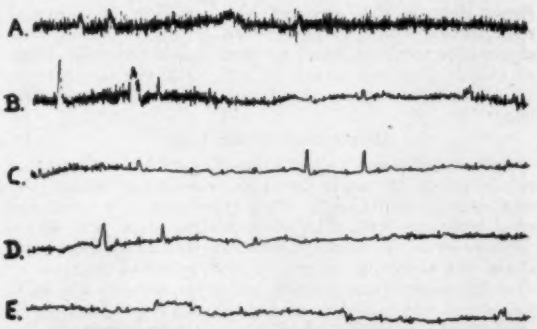


Fig. 3—E.M.G. from the neck of a patient who habitually tensed his muscles even at rest. Explanation in text (p. 662).

his shoulder and upper arm tended to go into spasm when playing a fast passage. This spasm was connected with a habit of pulling his head over towards his right shoulder, a habit of which he was quite unconscious when he became engrossed in his playing. In A the patient has been adjusted until there is a freedom from tension in the neck and shoulder: in B he raises and lowers the elbow as in bowing: in C he does the same thing again, but now it will be seen that the muscle has not returned to its original resting state. The new resting state, which is associated with a postural deformity of pulling the head to one side, is one of greatly increased tension, and it

Fig. 4—Stroboscopic picture of subject bending forward (a) with the dorsal and lumbar spine curved, and (b) keeping his back straight and moving from the hip-joint. Note that in (a) he pulls the head further and further back.

is not until I adjust the head and release the muscle that it returns to its original resting state (D) The patient in this case I was not detecting the error, and his homœostatic mechanism was not functioning at its best.

Here then is the crux of the problem of postural re-education—how to make such errors as conspicuous as possible to the patient, so that he can recognise them as they occur and return at will to a resting state in which the tension is distributed properly through the body.

Disposition of the Body

Before, however, I deal with the problem of postural re-education, I want to say something about the anatomical conditions in which there will be a minimum of interference with a balanced resting state, and which predispose to the most efficient functioning of the body: I am not so much concerned with *attitudes* (that is to say, temporary postures and gestures), as with the basic *disposition* of the body, compounded as it is at any given time of the patterns which we have inherited and the patterns we have learned.

Head-neck Relationship

The primary defect in postural disorders is usually in the region of the head and neck. If the body is to move and to develop in an integrated manner, it should do it in such a way that the head leads and the body follows. Although there are a tremendous number of ways in which the head-neck equilibrium can be disturbed, the most common fault is a retraction of the head backwards and downwards. Fig. 4 shows this in a stroboscopic picture of someone bending forward from the hip-joint with a curved spine: it will be seen that the head gradually pulls further and further back. Below, he is shown bending forward from the hip-joint with his back straight; and this time there is not so much interference with the head. A similar head retraction is shown clearly in figs. 11 and 12 during the act of sitting down.

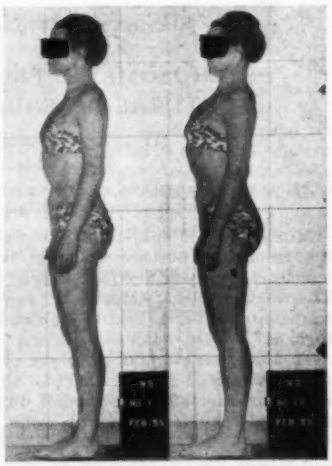


Fig. 5—The standing position. (a) Balanced posture. (b) As wrongly taught.

There are good anatomical reasons why people find such difficulty with the correct use of their heads. The muscles which control the head mostly insert into the occiput, and there is a great disparity in the number, strength, and size of the anterior flexor muscles of the head, and the posterior extensor group (Dart 1947). In the pronograde "monkey" position from which we have developed, strong flexors are not required: but in the upright orthograde position, the head extensors, if they are unduly contracted, tend to pull the head backwards and downwards; and when this happens, the sternomastoids, instead of acting as stabilisers, become additional retractors.

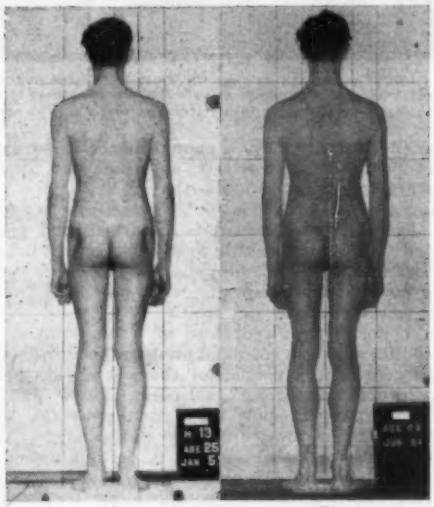


Fig. 6—(a) Patient with faulty tension. (b) After being taught to relax. Note increase in height and shoulder width, and absence of tension in neck and buttocks.

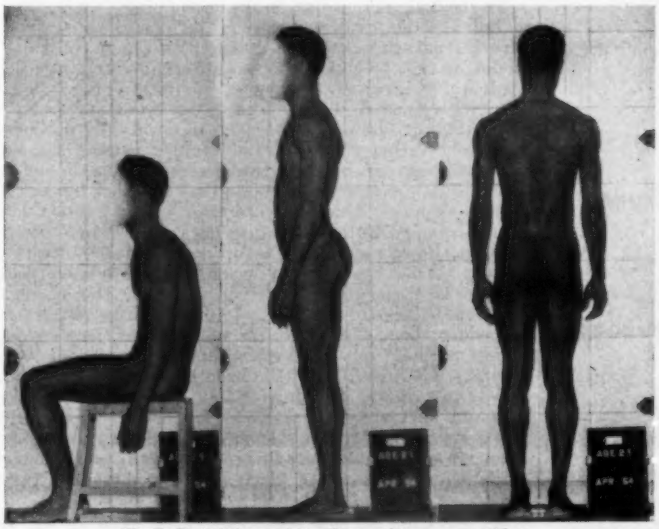


Fig. 7—Bad sitting and standing positions in an athlete.

Separation of Joint Surfaces

The next fundamental principle in the disposition of the body is that joint surfaces, in the resting state, should never be pulled together, but should tend to separate away from each other. Thus contraction and shortening of the back muscles should be replaced by a tendency of the back to lengthen, so that the vertebræ tend to separate instead of to squash together: similarly, the humerus should lengthen out from the shoulder-joint, the forearm from the elbow, the hand from the wrist: the femoral head should not be contracted into the hip-joint. This probably sounds obvious, but in fact it is rare to find people being taught to separate joint surfaces apart, instead of contracting them together. A glaring example occurs in the case of the shoulders. Fig. 5 shows, on the right, the posture taugnt in the "fundamental standing position"—chin tucked in, chest thrown out, shoulders braced back. There are very few people who have not, at one time or another, been given this pernicious instruction to brace the shoulders back, which contrasts poorly with the posture on the left. I cannot for the life of me see why this anachronism is being persisted with. Perhaps the spurious squaring which it gives to the shoulders looks straighter, and I have heard it said that this is the way to correct a thoracic kyphosis. It cannot be accentuated too strongly that round shoulders with a thoracic kyphosis are primarily due to a faulty use of the head and neck.

Perhaps the most important malfunctioning which bracing back of the shoulders produces is interference with the act of breathing. Fig. 6 shows a patient who has been taught to release the faulty tension which retracted his head down into his thorax, and which pulled the shoulders together. It will be seen that when the tension is released, his stature has increased, and with the widening apart of the scapulæ, the best conditions are present for lateral expansion during breathing.

Hip and Shoulder Girdles

Perhaps the next most important primary postural blunder is the habit of using the pelvis as part of the legs, thereby making a false joint in the lumbar spine, instead of integrating the pelvis with the rest of the back during moving. This was shown in fig. 4, and is demonstrated again in fig. 7, which shows a coloured athlete, a sprinter, in the sitting and standing positions. He works in an office and tells me he always sits like that: yet his standing position is just as bad in the opposite direction: in this position there is excessive tension in his erector spinæ muscles, and quite obviously it would be no solution to his slumped sitting position to give him strengthening exercises. He should think of his pelvis as being part of his back; and when he wishes to avoid slumping, he should lengthen the whole trunk off the hip-joint, not just from the lumbar spine.

Another common postural fault is adduction and internal rotation of the femur. The crossed legs position, though it may be ladylike and comfortable, is fatal to the coördination. Crossing of the ankles is less damaging, because it allows the knees to be directed outwards.

Slightly more complicated but very common distortions are the rotary twists of shoulders and pelvis: fig. 8 shows three glaring examples in people who were quite unaware of their deformity. These rotary twists are extremely difficult to sort out and are important causes of back pain. The patient often finds it difficult to locate his pain accurately and may even feel that it is arising in his thorax or abdominal cavity. One finds patients of this kind travelling round from specialist to specialist in order to exclude disorder in some abdominal organ—kidneys, appendix, gall-bladder, or stomach—until many of them develop secondary neurotic symptoms because no-one believes in their very real pain. Many obscure pains which the patient finds difficulty in locating exactly are associated with rotary twists in the dorsal or lumbar spine.

Bodily Behaviour

One basic point is being overlooked in a great deal of remedial work—that it is *behaviour* rather than *structure*

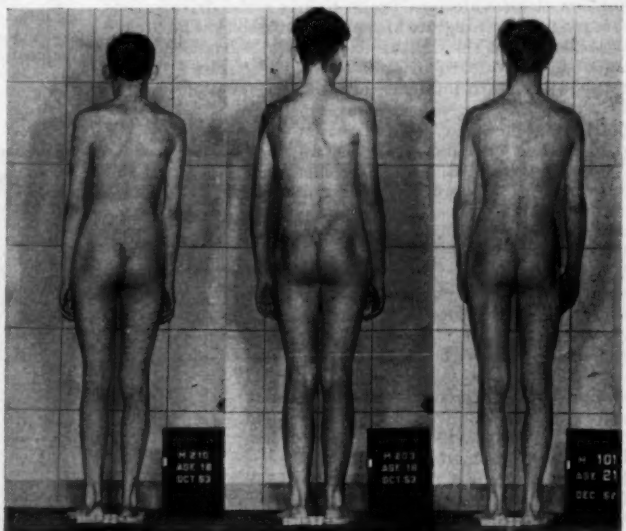


Fig. 8—Rotary twists of shoulders and pelvis in three subjects who were unaware of their deformity.

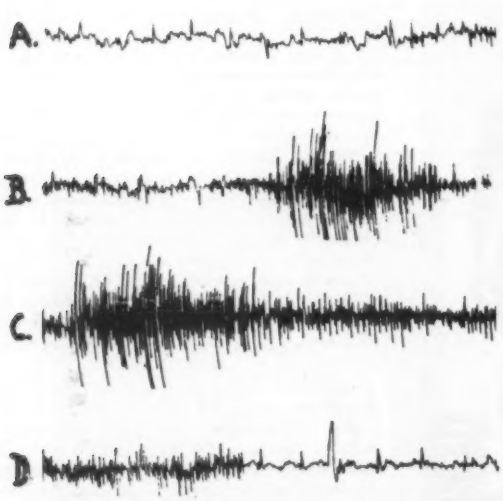


Fig. 9—Electromyogram of trapezius of a violinist whose shoulder and upper arm muscles tended to go into spasm (see pp. 659-60).

which determines the mechanics of the body. By behaviour I mean *all* the habitual motor responses with which we react to the outside world, and by means of which we adapt ourselves to its various stresses. The behaviour pattern, of course, can take place only within a certain anatomical and physiological framework; but, just as in a game of chess, which has certain fixed laws, an almost infinite number of variations of behaviour is possible.

Although it may be helpful for some purposes to view the body as a machine, an affair of muscles and levers, the human organism is a very rare type of machine, a motor-car which not only travels along, but carries out its own repair and maintenance work, provides a driver, and on occasion reproduces itself. But if the driver insists on putting on the brakes on the front wheels whilst he accelerates with the rear wheels, it is no solution to provide new brake linings: the driver needs to learn how to integrate his performance so that he breaks or accelerates at the right time. How did the patient illustrated in fig. 6 learn to undo his faulty tension? It was no good trying to influence him at the symbolic level—in other words, verbal or pictorial instructions are no good by themselves. It is no good telling a child to "sit up" or "stand up straight," until he has been shown how. There are a number of methods for re-educating postural awareness: the one which I have used for over 15 years is the method put forward by Matthias Alexander (1932). Fig. 3 (p. 659) is an E.M.G. from the neck of a patient who habitually tensed his muscles even when at rest (like the patient in fig. 6), and thereby disturbed the mechanics of the head. In A is shown his habitual resting state, which is one of greatly increased tension. In B, I adjust the head manually until the tension releases. When I stop the adjustment, the tension returns. In C and D I repeat the procedure. In E I repeat it, but when I remove my hands, he now maintains the free state. (This is a continuous record, split up for convenience.)

By itself this procedure is not enough: it is necessary to link up the "raw experience" which is thus given with the patient's conscious brain, with a new conscious model, so that he can evoke the "resting state" at will. All learning involves an element of conditioning. Thus if we wish to teach a child what a cat is, we say "cat" every time we show one to him until eventually he links the two together. In the same way, a patient can be shown the raw experience of the correct tensional balance, and this he is taught to associate with a verbal signal. I use the words "head forward and up"—"forward" being the opposite of retracting back, and "up" being the opposite of pulling the head, like a tortoise, into the thorax. When this primary order has been learned, the patient is then given the experience of the correct tensional balance in the back: I use the words "lengthen and widen the back." It will be noticed that these orders "forward and up," "lengthen and widen," represent contrary adjustments. If the head goes too far forward, it will pull down in front. If it goes too far up, it will pull back. And if the back lengthens too much, it will be at the expense of width: if it widens too much, it will be at the expense of length. A homœostatic equilibrium takes place between these contrary pulls.

An example of this procedure, in a child of 13, is shown in fig. 10.

This child has been familiarised with the idea of giving a sequence of directions to herself, and was not touched during the procedure. In the first picture she is exhibiting a lumbar lordosis, a habit into which she readily falls when fatigued or over-reactive. While she consciously directs the head forward and up, and lengthens and widens the back, she puts the knees forward. Still giving the directions, she inclines forward from the hips.

The position now is one of the greatest value in re-education, provided that the patient has first been familiarised with the directions to the head and the back. Here again there is a fundamental homœostatic equilibrium of contrary pulls, with the head going forward, the knees going forward, but the back coming back. One can visualise arrows taking the head forward, the knees forward, but a contrary stretch as the lower back comes back, lengthening to separate joint surfaces.

In this position, most of the joints are in their mid-range; flexor and extensor pulls are balanced. This is what I mean by integrating the pelvis with the back, rather than with the legs. In this position the patient receives very clear and, at first, quite tiring experiences. If the guiding directions are maintained, the erect posture can be regained whilst maintaining these contrary pulls. In fact, this child did not quite straighten her knees sufficiently, but it will be seen that the lumbar lordosis has been corrected.

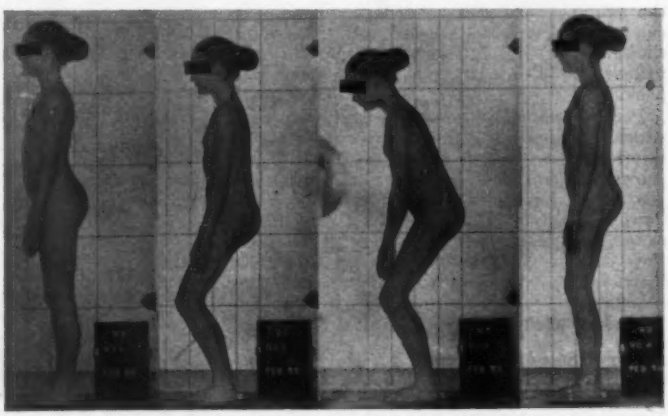


Fig. 10—Child of 13, correcting lumbar lordosis.

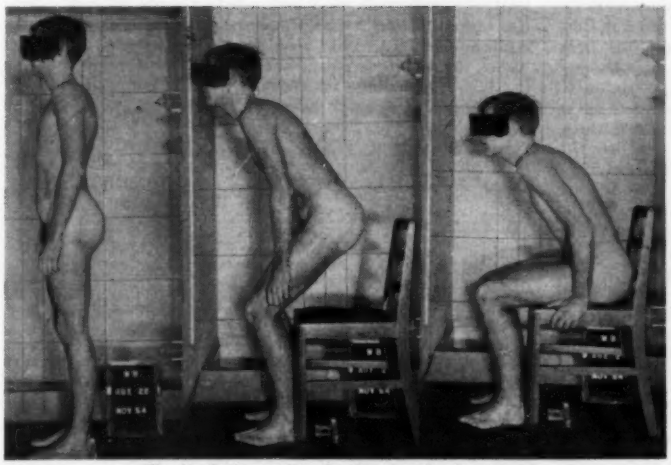


Fig. 11—Patient pulling head back as he sits down.

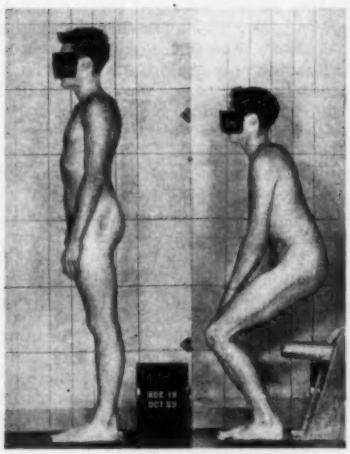


Fig. 12—Kyphotic deformity accentuated by movement.

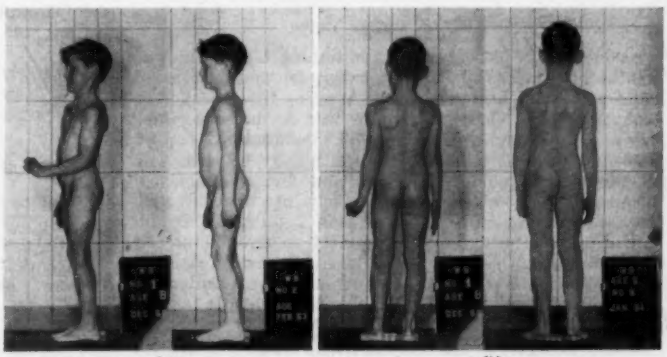
Patterns of Behaviour

Coghill and Davenport Hooker (Herrick 1949) have shown that in the vertebrate embryo or fœtus there is a basic pattern of integration, which they call the "total pattern of integration." In the embryonic stage, when arms and legs have not yet developed, a stimulus anywhere on the body produces a "total pattern response" which starts at the head and works down through the back. The head leads and the body follows. Even when arms and legs develop, a "total pattern response" still appears if they are stimulated. It is only at a later stage that stimulation of the limbs produces "partial pattern responses." Behaviour in fact develops as a total pattern sequence, which should dominate partial pattern movements. A response, say, of moving an arm, needs first to be canalised into the total pattern—the head, neck, and then the back, if there is to be proper coördination. If the child in fig. 10 is to move the arms now in an integrated manner, there must be no interference with the total pattern of the head, neck, and back. The guiding directions which she has been taught will mean that her *intention* is integrated. This way of learning an improved use of the body applies, in principle, to the correction of the various other defects, and as each patient has his own difficulties, all the skill and ingenuity of the person training him is required in order to achieve a balanced resting state.

It is, however, one thing to learn something in this way, but quite a different thing to apply it in the hurly-burly of the day's activities. If what has been learned is to be applied, the crucial point always comes when a patient reacts to a stimulus.

Thus the patient in fig. 11 reacts to the idea of sitting down by pulling his head back, thereby losing his total pattern coördination. By continually reacting in this way, there will be a slow hardening over the course of the years of habits of response which eventually become the basic disposition—in this case, a kyphosis.

Unfortunately instinctive reactions under conditions of civilisation are not always appropriate or reliable. Unless we stop when we receive a stimulus, we shall have no control over our reaction. Fig. 12 shows a bad kyphotic deformity in a young man which he accentuates when he moves. I am showing him because he is one of a group who have been given much *verbal* instruction over a period of 12 months, in a training college, about the need to avoid head retraction. However, when he reacts instinctively to the idea of sitting down, he immediately pulls his head back. In spite of his verbal teaching, he has not learnt to stop his instinctive habit. Until he does this, he will go on churning out his old faulty behaviour pattern ad infinitum. If, however, he does stop—and this soon becomes second nature—he will have time to integrate his thoughts and his intention, so that he releases his reaction in the right order: he will, in fact, see that he maintains his total pattern of reaction, so that his deviations from the resting state will be slight, and he will return to a state of rest when his actions are completed. This procedure applied to a young tension athetoid, is seen in fig. 13. The athetosis was almost constant and became pronounced whenever he attempted to use the hand. By teaching him first to direct his attention to his head and then to his back, and only then to the movement of his arm, his reaction became, after 2 months, integrated and controlled. Fig. 13(*a*) shows the patient in lateral view before treatment and after 2 months' treatment. Fig. 13(*b*) shows a back view of the same patient, on the left before treatment, and on the right after a year. It will be seen that his back is growing somewhat straighter, and he now attends an ordinary primary school, to which he walks by himself every day. This child again illustrates the principle of teaching a patient to canalise his energy, his response, first into the total pattern, and only then into the partial pattern reactions.



(*a*) (*b*)

Fig. 13—Improved posture and control of movement in a patient with athetosis.

In a recent review of the relationship between anxiety and muscle tension (Barlow 1955) I have pointed out that a patient's muscular tensions are a fundamental part of his defence against the world. When his tension state is removed, he may for a time feel naked, defenceless, and "wrong" as he copes with his affairs. This is one of the greatest difficulties in teaching him new habits. He rapidly reverts to his old tension state and to the old posture associated with it—the posture, say, of submission to authority by slight cringing, the feeling of the tall girl that she must pull herself down to be smaller, the feeling of a child that she will get what she wants if she is pert and wears her head cocked on one side—a little-girl attitude that often persists well on past middle age. Then again there are all the instinctive fear reactions which lead to a misuse of the body. A mountaineer patient of mine tells me that when he is training novice climbers the impulse of fear is always associated with a retraction of the head and a stiffening of the arms and legs into the body—the very thing which destroys coördination and leads to falling. These reactions are infinite in number and are deeply ingrained.

Conflict of opinion on the subject of low back pain will be with us for ever unless we realise that it is *behaviour* which disturbs the mechanics of the back, all day and every day, and that it is only through a re-education of behavioural attitudes that we will alter these mechanical faults. If I were asked to sum it up in one phrase, I would say that what is wanted in order to restore a balanced equilibrium to the body is not a strengthening of muscle, but an *integration of intention*.

The patient in fig. 13 is shown by kind permission of Mr. D. Price-Williams.

REFERENCES

Alexander, F. M. (1932) The Use of the Self. London.
Barlow, W. (1952) *Ann. phys. Med.* **1**, 77.
— (1954) *Ibid*, **2**, 113.
— (1955) *In* O'Neills Modern Trends in Psychosomatic Medicine. London.
Dart, R. (1947) *S. Afr. med. J.* **21**, 74.
Herrick, Judson (1949) George Ellett Coghill, Naturalist and Philosopher. Chicago.

THE HEALTH SERVICE IN 1954

THE Ministry of Health's annual reports are invaluable guides to long-term trends. Part 1 of the report for 1954 [1] underlines several heartening trends in the National Health Service, including a reduction in waiting-lists at general hospitals (due to increasingly prudent use of beds) and at sanatoria (due mainly to a decline in notifications and to therapeutic advances). But the report has more sombre aspects: for instance, the mental hospitals remain grossly overcrowded.

USE OF HOSPITAL BEDS

About 40% of patients admitted to hospitals (excluding mental and mental-deficiency hospitals) come in after some period on a waiting-list. Waiting-lists reached a peak in 1950; thereafter there was a sharp decline, followed by a further peak in 1953. Between the end of 1953 and the end of 1954 the total fell by no less than 49,000 (52,000 including mental and mental-deficiency hospitals) to 465,000 (474,000 including mental and mental-deficiency hospitals). This reduction is not spread evenly throughout the country or throughout the different specialties (table I). The number of inpatients and outpatients continues to increase (the number of inpatients increased in 1954 by about 87,000). It follows that the reduction in waiting-lists results directly from the increased ability of the hospital service to meet the demands on it. This step forward has been achieved partly by an increase in the number of available beds; in 1954 the average total was 476,523 (including mental and mental-deficiency hospitals), compared with 471,036 the previous year. But largely it is due to increased turnover (table II).

TABLE I—HOSPITAL WAITING-LISTS, BY SPECIALTIES, DEC. 31, 1953 AND 1954

Specialty	Year		Percentage reduction
	1953	1954	
General medicine	10,027	8844	12
General surgery	135,112	126,901	5·5
E.N.T.	175,915	147,613	16
Gynæcology	59,071	58,292	1
Tuberculosis	5299	3017	43
All non-mental specialties	514,109	464,832	10

"The increase in every case may appear small and unimpressive but its smallness is itself significant; the difference between 12·8 and 13·1—three in every ten non-mental beds taking up one extra patient each during the year—made room for upwards of 70,000 additional patients."

Percentage bed occupancy—the ratio of average beds occupied to average beds available during the year—receded from 90 in 1953 to 89·8 in 1954. (These figures include mental and mental-deficiency hospitals.) The improved bed usage was due mainly to shortening of the average length of stay (table III).

Such an improvement, as the report remarks, can be achieved in several ways,[2] including more extensive use of outpatient and domiciliary services; reduction in the interval between the discharge of one patient and the admission of the next; arrangement of admissions to accord, where necessary, with the days on which specialised investigation and operating sessions are held; and mobilisation of the services for convalescence and rehabilitation so as to avoid unnecessary delays in discharge.

CAPITAL DEVELOPMENT IN THE HOSPITAL SERVICE

In the financial year 1953–54 £10 million was allocated to the hospital service for capital development. Actual capital expenditure from the start of the health service to the end of March, 1954, amounted to some £50½ million. The distribution by category and by type of hospital is shown in tables IV and V.

During the year a programme of special schemes to be financed outside normal allocations to hospital boards was drawn up. These schemes included the allocation in 1954 of an initial £1 million for additional beds in mental and mental-deficiency hospitals. Work was started on a mental-deficiency hospital at Greaves

TABLE II—TURNOVER (NUMBER OF PATIENTS DISCHARGED OR DIED PER ALLOCATED BED), 1953 and 1954

Group of patients	Non-teaching hospitals		Provincial teaching hospitals		London teaching hospitals		All hospitals	
	1953	1954	1953	1954	1953	1954	1953	1954
Other than mental and mental-deficiency	12·1	12·3	21·7	22·0	17·1	17·7	12·8	13·1
"Acute" (i.e., other than mental, mental-deficiency, chronic, and chest)	17·4	17·7	22·2	22·9	18·2	18·5	17·8	18·1
All	6·7	6·8	21·7	21·9	16·7	17·1	7·4	7·5

1. Report of the Ministry of Health for the Year Ended Dec. 31, 1954. Part 1. 1. The National Health Service. 2. Welfare Food and Drugs, Civil Defence. Cmd. 9566. H.M. Stationery Office. Pp. 242. 8s.

2. H.M.(54)89. See *Lancet*, 1954, ii, 964.

TABLE III—AVERAGE DURATION OF STAY IN HOSPITAL (DAYS), 1953 AND 1954

Specialty	1953	1954
General medicine	22·8	22·8
General surgery	14·3	13·8
Gynæcology	11·7	11·5
Pædiatrics	18·6	18·4
Traumatic and orthopædic surgery	28·2	26·7
Diseases of the chest	158·2	151·7
E.N.T.:		
Other than tonsils and adenoids	8·5	8·1
Tonsils and adenoids	4·0	4·2
Thoracic surgery	32·2	32·0

Hall, near Southport. This was the first large hospital providing inpatient accommodation to be started since the war.

MENTAL HEALTH SERVICES

The mental and mental-deficiency hospitals remained severely overcrowded. At the end of the year the designated mental hospitals, excluding the former Public Assistance institutions, had bed-space on authorised standards in use for 121,555 patients. There were 140,487 patients in residence; so the accommodation in use was overcrowded by 15·6%. The corresponding figures for 1953 were 120,212, 139,135, and 15·7%. The admission-rate continued to rise: in 1954 admissions totalled 71,699, compared with 67,422 in 1953.

In mental-deficiency hospitals the accommodation on authorised standards in use at the end of 1954 was 46,644, compared with 45,657 at the end of 1953—an increase of 987. There were 52,240 patients in residence, so the accommodation in use was overcrowded by 12%. At the end of the year there were 7033 mental defectives on hospital waiting-lists, compared with 8442 at the end of 1953. "This encouraging reduction in the number of those awaiting admission springs mainly from the increased proportion of capital resources made available for this purpose, the effects of which are now beginning to be felt."

TABLE IV—HOSPITAL CAPITAL EXPENDITURE, 1948–54, BY CATEGORY

Category	Percentage of total
New hospitals and major extensions	10·1
Ward accommodation	20·8
Special medical departments (including operating-theatres and diagnostic departments)	19·1
Outpatient and casualty departments	6·7
Accommodation for staff, including nurse training	16·2
Laundries	2·1
Main kitchens	2·6
Engineering services	13·4
Fees for future general developments	0·5
Administration (hospitals)	1·5
Miscellaneous	7·0

At the end of 1954 the average number of staffed beds per nurse was 6·6 in mental hospitals and 7·0 in mental-deficiency hospitals.

TUBERCULOSIS

In 1954 notifications of tuberculosis decreased despite better diagnostic facilities. The improvement in the seven years from 1948 is indicated by the figures in table VI.

HEARING-AIDS

By the end of 1954 the number of people in England and Wales fitted with 'Medresco' hearing-aids since the start of the service had risen to over 412,000. Except in a few areas the waiting period had been almost eliminated. Fresh applications numbered less than 5000 a month.

BLOOD-TRANSFUSION SERVICE

Effective blood-donors reached a total of 540,389. Donations rose from 659,674 in 1953 to 700,202 in 1954—an increase of over 6%. The attendance-rate, which varied with the seasons and the weather, averaged about 49% of those called. It is estimated that to meet the probable growth in demand the effective donor panel should be increased by about 25%.

USE OF SPECIAL DEPARTMENTS

The national average of the percentage of work done in hospital X-ray departments on behalf of general practitioners rose from 8·3 in 1953 to 8·7 in 1954. In hospital pathological departments the corresponding figures were 4% in 1953 and 4·3% in 1954. The total number of units of work done at hospital X-ray departments in 1954 was about 20,250,000, compared with about 18,250,000 in 1953—an increase of 10·9%. The corresponding figures for pathological departments were 42,750,000, 37,750,000, and 13·2%.

TABLE V—HOSPITAL CAPITAL EXPENDITURE, 1948–54, BY TYPE OF HOSPITAL

Type of hospital	Percentage of total
General	53·2
Mental and mental deficiency	16·0
Chronic	4·2
Convalescent	0·5
Infectious diseases	0·5
Maternity	3·3
Orthopædic	1·7
Tuberculosis	4·8
Tuberculosis and infectious diseases	1·4
Children	2·0
Other special	9·0
Other establishments (clinics, &c.)	1·9
H.M.C. offices and board services	1·5

VISITS TO CHILDREN IN HOSPITAL

In 1953, on the advice of the Central Health Services Council, the Minister urged hospital authorities to allow the daily visiting of children in hospital by their parents.[3] Previous inquiry had shown that in mid-1952 of some 1235 non-teaching hospitals taking children only 271 allowed daily visiting, while 141 prohibited all visiting except in emergencies. Since then the position has improved. The number of hospitals at which daily visiting is allowed has roughly trebled, while only 28 hospitals do not normally allow visiting.

"General experience seems to have been that daily visiting has in practice worked smoothly and beneficially, and that it does not have the harmful effects—in particular, emotional disturbances to the children and the introduction of infection

TABLE VI—TUBERCULOSIS STATISTICS, 1948–54 (FIGURES IN PARENTHESES RELATE TO RESPIRATORY TUBERCULOSIS ONLY)

Year	Mortality	Notifications	Hospital beds * at Dec. 31		Nursing staff at Dec. 31		Waiting-list at Dec. 31
			Allocated	Occupied	Whole-time	Part-time	
1948	21,993 (19,088)	52,576 (43,971)	..	..	..	..	..
1949	19,908 (17,559)	52,041 (44,480)	31,273 (27,286)	26,115 (22,767)	4781	984	10,986
1950	15,969 (14,079)	49,358 (42,435)	33,098 (29,207)	27,782 (24,411)	5332	1064	9578
1951	13,806 (12,031)	49,440 (42,696)	34,120 (30,581)	29,408 (26,397)	5657	1173	7096
1952	10,585 (9335)	48,093 (41,904)	35,293 (31,963)	29,737 (27,156)	6040	1185	6126
1953	8902 (7913)	46,546 (40,917)	35,118 (32,446)	30,442† (28,199†)	6692	1615	5299
1954	7897 (7069)	42,348 (36,973)	35,069 (32,593)	30,142† (28,088†)	7302	1755	3017

* Excluding 1300 beds outside the National Health Service.
† Average daily number of beds occupied during whole year.

3. R.H.B.(53)18. See *Lancet*, 1953, i, 531, 539.

—which were at one time feared in some quarters. There have been very few instances indeed of a hospital trying daily visiting and then abandoning it."

ACTIONS FOR NEGLIGENCE AGAINST HOSPITALS

After 1948 there was a considerable increase in the number of claims and legal proceedings against hospitals and their staff, principally medical staff, alleging negligence in the treatment of patients. No figures are available for the exact number of these cases, because they are handled by the hospital authorities themselves and no central records are required or kept. There was, however, some evidence that by the end of 1954 the peak had been reached or even passed.

Compensation payments of all kinds made by N.H.S. hospitals in England and Wales rose from £7560 in the period July 5, 1948, to March 31, 1949, to £159,047 in the year ended March 31, 1954.

"Although the number of claims has unquestionably increased, it has probably not increased in the same proportion as the amounts paid by way of compensation. This is because the Courts have tended, in view of the altered value of money, to make higher awards of damages: in the first nine months of the National Health Service the highest compensation payment was £1000; in 1949/50 it was £3375; in 1952/53 it was £11,740; and in 1953/54 it was nearly £12,500.

"There is no evidence whatever that there has been any deterioration in the standard of service provided which might account for the increase in the number of claims. Several factors have probably contributed to it. Firstly it has now to be accepted, in the light of recent Court decisions, that in law a hospital authority is responsible for the negligence of all its agents and servants, including the medical staff. Secondly, the Legal Aid and Advice Act, 1949, has made it possible for many people, who would formerly have been deterred by their inability to afford it, to pursue their real, and sometimes their imagined, grievances in the Courts. (There have been one or two sharp comments from the Bench recently on frivolous actions against the hospital service.) The old feeling of forbearance towards the hospitals, even where real damage had been done, seems to be disappearing. Thirdly, it must be borne in mind that a great many of the actions heard in recent years have arisen from causes occurring before the beginning of the National Health Service.

"It is true that the Limitation Act, 1939, provided that no action should be brought against a public authority unless commenced within one year of the event about which the complaint was being made. But in accordance with general Government policy in this matter and by an administrative act of the Minister, hospital authorities were allowed to plead this provision in defence only with the Minister's prior approval. This was in practice given only where the delay had been quite unreasonable or had seriously prejudiced the defence through, for example, the disappearance in the meantime of essential witnesses. The result has been the initiation of proceedings in an appreciable number of cases where the grounds for the action occurred some time before 1948. The Law Reform (Limitation of Actions, &c.) Act, 1954, has now changed the position, putting public authorities on precisely the same footing as private persons as regards the period within which actions may be brought against them. In the case of actions for damages for negligence the period is now three years and, subject to certain transitional provisions, hospital authorities may now automatically plead the statutory period of limitation in their defence.

"Another change in the handling of actions against the Service was introduced during the year through an administrative agreement with the medical profession and their defence societies. Claims against hospital authorities are often made in respect of the alleged negligence of doctors on their staff and, where the claims were successful, it had been the practice, up to the early part of 1954, to claim by legal process a contribution towards the damages and costs awarded against the hospital from the doctor or doctors responsible. This often meant a subsidiary Court action between the hospital and the doctor under the Law Reform (Married Women and Tortfeasors) Act, 1935, which was heard side by side with the main action and benefited neither the hospital nor the doctor. Indeed, owing to the fact that it was in the interest of both the hospital as defendant and the doctor as witness or co-defendant to throw as much of the blame as possible each on the other, it was possible that cases in which there had been no true negligence might nevertheless be lost through ill-coördinated defence.

"By agreement between the Minister and the profession and medical defence societies, therefore, contribution proceedings against doctors are no longer brought under the Tortfeasors Act. Instead, the hospital and the defence society acting for the doctor (whether or not he is joined as co-defendant in the action) try to agree privately between them, if possible before the case comes to Court, an apportionment of whatever sum may have to be paid to the plaintiff. If they cannot agree, a 50 : 50 apportionment is adopted. It is early to assess the effects of this new arrangement, but it has been working smoothly and has made the conduct of defence, both by the hospitals and the doctors, appreciably easier. A similar arrangement has been agreed with the dental profession."

STRUCTURE OF GENERAL PRACTICE

In 1954 the number of admissions to medical lists was 1176, and the number of deletions 782—a net increase of 394. Of those admitted 678 entered into partnership, including 320 assistants who joined their former principals, and 175 were doctors who had applied to start new

TABLE VII—DISTRIBUTION OF PARTNERS BY SIZE OF PARTNERSHIP

No. of doctors in partnership	1953	1954	Increase
2	6146	6414	268
3	2898	3129	231
4	1168	1308	140
5	410	445	35
6	241	287	46

single-handed practices. The number of admissions included 12 arising from exchanges of practices.

On July 1, 1954, there were 6899 doctors practising single-handed and providing unrestricted medical services. The corresponding figure in July, 1953, was 7147.

In the year from July 1, 1953, to June 30, 1954, doctors practising in partnership increased by 720 to 11,583. The increase in the total number of partnerships was only a little more than half that in the previous year, but the distribution between the various sizes remained constant (table VII). "It seems fair to conclude," says the report "that there is still a trend for more doctors to practise in partnership and that there is still a movement away from single-handed practice on the part of doctors who have already been in practice as principals."

In 1954 the total number of firms employing assistants was 1451, compared with 1514 in 1953; and the total number of assistants was 1504 (compared with 1596). Whereas in 1953 there were 729 assistants aged 30 years or less, in 1954 there were 668.

The numbers of assistants in the various age-groups in the years 1952–54 are shown in table VIII. The

TABLE VIII—DISTRIBUTION OF ASSISTANTS BY AGE

Age (yr.)	1952	1953	1954	Age (yr.)	1952	1953	1954
30 and under	748	729	668	51–55	73	55	40
31–35	398	533	444	56–60	29	31	35
36–40	211	172	149	61–65	26	21	13
41–45	92	68	68	66–70	22	24	22
46–50	67	39	42	71–75	13	14	16
				76 and over	10	10	7

changes in the age-groups between 36 and 55 are "remarkable. In the age group 36 to 45, there was a decrease of 28·4 per cent. and in the age group 46 to 55 a decrease of 41·4 per cent. These figures suggest that a considerable movement has taken place during the last two years from assistant to principal status."

Conferences and Congresses

INTERNATIONAL CONGRESS OF NEUROPATHOLOGY

At the start of the second International Congress of Neuropathology, held in London on Sept. 12–17, Dr. J. G. GREENFIELD took over as president from Dr. Mario Gozzano (Rome). Opening the congress, Sir HENRY DALE, O.M., F.R.S., remarked on its truly international character and on the variety of the programme.

About 400 members were present, and some 180 papers were read. A few of these are summarised here.

Pathology of Involuntary Movement

In the inaugural session Dr. GREENFIELD, in his presidential address, paid tribute to the memory of James Parkinson, whose bicentenary is being celebrated this year. Although Parkinson had no definite pathological evidence as to the site or nature of the disease, said Dr. Greenfield, he was clearly of the opinion that it should be studied by pathological methods, for he exhorted the contemporary pathologists to emulate the example of Morgagni, John Hunter, and Matthew Baillie. Dr. Greenfield reviewed the historical landmarks which followed the publication of Parkinson's monograph in 1817.

G. LAFORA (Madrid) dealt with the physiological and pathological considerations of myoclonus and was followed by J. HALLERVORDEN (Giessen) on the basal ganglia with special reference to the extrapyramidal disorders, J. NEGRIN (New York) on parkinsonism and choreo-athetosis in supratentorial gliomas, R. HASSLER (Freiburg) on the pathological basis of tremor and parkinsonism, and J. N. CUMINGS (London) on the chemistry of Wilson's disease. J. PURDON MARTIN (London) discussed the findings in 3 cases of hemichorea where the lesions were in parts of the brain other than the corpora luysi and showed their importance in corroboration of the experimental work of Whittier and Mettler on the relationship of these bodies to the globus pallidus.

Mental Disorders

CORTICAL BIOPSY IN DIAGNOSIS OF DEMENTIA

W. BLACKWOOD (London) described the results of 30 cortical biopsies to elucidate or confirm the clinical diagnosis in children with progressive dementia. In about half the biopsies it was possible to indicate the pathological process, and in about a third to give an exact diagnosis. The conditions found included subacute encephalitis (Dawson's inclusion-body encephalitis and van Bogaert's subacute sclerosing leuco-encephalitis), cerebral lipoidosis, metachromatic leuco-encephalopathy, and progressive fibrinoid degeneration of fibrillary astrocytes (hyaline pan-neuropathy).

SUBACUTE CEREBRAL DEGENERATION WITH MYOCLONIC EPILEPSY

W. H. MCMENEMEY and S. NEVIN (London) reported 5 further instances of a disorder, described in 1954 by Jones and Nevin, characterised by the onset in late adult life of vague prodromal symptoms leading to signs of focal cerebral disorder, such as hemiplegia, severe mental disturbance with clouding of consciousness, and myoclonic epilepsy. The condition was progressive and fatal over three to four months. The electro-encephalographic changes were distinctive—consisting of periodically recurring generalised sharp and slow wave complexes. The pathological changes were also distinctive, comprising widespread cortical degeneration, a tendency to status spongiosus, and widespread glial reaction, especially in the outer cortical layers where some of the neuroglial cells resembled *gemästete* glia. Jones and Nevin had suggested that the syndrome was due to vascular insufficiency, but Hallervorden and Heidenhain had concluded that it was purely degenerative. Examples of this disease were to be found among the reported instances of the Jabob-Creutzfeldt disease.

S. BORNSTEIN and G. A. JERVIS (Montrose, N.Y.) reviewed the clinicopathological findings in 25 reported cases of the Jakob-Creutzfeldt disease and described 2 fresh instances illustrating extreme varieties within the syndrome: the 1st of sixteen months' duration with a clinical diagnosis of amyotrophic lateral sclerosis, and the 2nd of fourteen months' duration with symptoms of severe dementia accompanied by twitchings of the extremities on falling asleep. In order to identify cases according to the preponderance of involvement, the terms spinal-strio-cortical and strio-cortico-spinal degeneration were favoured. A toxic effect of unknown nature appeared to underlie the disorder.

PARALYSIS AGITANS AND CEREBRAL AGEING

W. RIESE (Richmond, Va) had sought signs of cerebral ageing in 6 cases of paralysis agitans. At necropsy the brain weight varied from 1000 to 1370 g. Convolutional atrophy was found in only 2 cases, senile plaques in only 1, and neurofibrillary changes in 2. Cellular changes in Nissl-stained cortical sections, consisting mainly of shrinkage, were seen in all cases. Glial reaction was either absent or insignificant, except in 1 case.

Temporal-lobe Epilepsy

J. B. CAVANAGH and A. MEYER (London) had examined the morphological changes in 40 resected temporal lobes. In about a quarter of the cases there were single focal lesions due to tumours, vascular malformation, or gross trauma, with a striking predilection for inferomedial structures, including the amygdaloid complex. In most of the remainder definite and substantial lesions were found; but these were quite diffuse or disseminated, and their significance in ætiology was often uncertain. Typical sequelæ of circulatory disturbances and anoxia (laminary cortical sclerosis, sclerosis of Ammon's horn extending into the uncus and amygdaloid nucleus) were common. The possibility of birth injury in some cases could not be excluded, but the status epilepticus that commonly occurred at the onset of the disease (often as a complication of some childhood malady) was a likely cause of these lesions.

K. SCHARENBERG (Ann Arbor, Mich.) remarked that the histopathological picture of psychomotor epilepsy, examined by the silver-carbonate technique, included amœboid degeneration of the astroglia (which was not, as some had suggested, a post-morfem change); degeneration of the satellite systems of the neurons; and extensive necrosis in the grey and white matter. The silver-carbonate technique revealed in living tissue a histological picture which was as characteristic of temporal-lobe epilepsy as were the histological changes associated with general paresis.

Encephalitis

INFANTILE SUBACUTE NECROTISING ENCEPHALOPATHY

R. B. RICHTER (Chicago) reported 3 cases of infants who presented with symptoms and signs of widespread devastating disease of the brain for which no source was found elsewhere in the body. The clinical features included the early appearance and persistence of feeding difficulties associated with dysphagia; inadequate sucking and regurgitation; slowness or lack of behavioural development with failure to support the head, to sit up or stand, or even to turn over from the recumbent position; eventual deterioration of simple sensory-motor and postural behaviour; impaired or absent pupillary light reflexes; blindness and deafness; very brisk tendon-reflexes; extensor plantar responses; and convulsions late in the course of the disease. The infants died in acute respiratory failure. In each case the salient pathological changes were foci of necrosis in the brain-stem affecting the ground-substance primarily without special selection for grey or white matter; this change was restricted to the tectum and tegmentum of the mid-brain, the tegmentum of the pons, and the central grey and reticular formation of the medulla oblongata. The disorder possibly arose from endogenous toxæmia or an inherent metabolic defect, possibly enzymatic.

ACUTE HÆMORRHAGIC ENCEPHALITIS

K. KRISTIANSEN, W. HARKMARK, and M. COHEN (Oslo) had found that acute hæmorrhagic encephalitis was not necessarily fatal. The diagnosis might be established in life by the presence in biopsy material of necrosis, cellular infiltration, hæmorrhage, and demyelination. Of their 6 cases, 3 had survived. In 1 recovery was complete; the other 2 survivors had mental symptoms. These 6 cases had appeared over the relatively short period of seven months, whereas no such cases had been observed in the previous two years. This apparently increasing incidence was consistent with causation either by infection or by a toxic agent.

TUBERCULOUS ENCEPHALITIS

M. GOZZANO, V. FLORIS, D. MERIGLIANO, and C. MOROCUTTI (Rome) had investigated the efficacy of streptomycin therapy in tuberculous encephalitis by inoculating the brains of guineapigs with living virulent tubercle bacilli. Control animals, to which streptomycin was not administered, died within a week; the cerebral changes were those of hæmorrhagic encephalitis and meningitis. A second group was treated with intramuscular streptomycin 30 mg. daily. These animals died fifteen to thirty days after inoculation; the brains showed a granulomatous type of leptomeningitis and widespread œdema. A third group was treated with streptomycin 30 mg. daily along with brain tissue intramuscularly. This group survived on average some three to six months. The brains contained granulomatous lesions in the region of the vessels and the perivascular parenchyma, together with small hæmorrhages. It was not clear how the efficacy of the the drug was enhanced by concomitant administration of brain tissue.

Blood-brain Barrier

D. H. M. WOOLLAM and J. W. MILLEN (Cambridge) said that the concept of a blood-brain barrier had been derived from observations that some aniline dyes, toxins, viruses, and drugs circulating freely in the blood-stream did not appear in the nervous tissue proper. A similar barrier existed between the blood and the cerebrospinal fluid (C.S.F.); and some confusion still existed because it was once believed that the C.S.F. was the nutrient fluid of the central nervous system, and that the exchange of substances between the blood-stream and the central nervous system took place entirely through the C.S.F. Various possible sites of the blood-brain barrier had been excluded. There remained four possible loci—the capillary endothelium, the neuroglia, the ground-substance, and the neuron itself—and much further work would be needed to determine which of these was the site of the barrier.

C. E. LUMSDEN (London) declared that the problem of the blood-brain barrier was the problem of molecular transport between the lumen of the cerebral capillaries and the neuronal structures. It was suggested that interstitial-fluid channels were absent or less readily created in the depths of brain tissue than in other organs, and that thus more use had to be made of bulk transport (to the perivascular spaces) of the products of cell damage and foreign particles by an extensive scavenger system of amœboid cells. Brain tissue approximated much more than other organs to the homogeneous cell structure which living tissue was generally said to possess. In the brain the transport of water and other molecules might depend more on diffusion through the cytoplasm of the neuroglia cells, aided by protoplasmic streaming and molecular exchange at the cell interface, than on intercellular percolation. In this sense the neuroglial "barrier" would be, not a specific membrane or architectural layer, but the whole width of the gel-like matrix separating the neurone from the blood-capillary. Dr. Lumsden illustrated his remarks with cultured astrocytes one of which measured 1270 μ from "wing-tip to wing-tip." Fibre-forming propensities of fœtal neuroglia were evident even in the 14–16-week human embryo, and movements and phasic refractility had been observed. He suggested that the ground-substance of the brain might consist of no more than glial cytoplasm.

G. BOSCHI (Modena, Italy) concluded that: (1) the anatomical relations of the blood-C.S.F. barrier were different from the relations of the blood-brain (neuraxis) barrier; (2) there was no obvious parallelism between the blood-C.S.F. barrier and the blood-brain barrier; and (3) the most important barrier from the clinician's standpoint was the blood-brain barrier. It was incorrect to assume that where there was a breach of the blood-C.S.F. barrier there was also a concomitant breach of the blood-brain barrier.

O. GRÖNTOFT (Gothenburg) had found that in rabbits the permeability of the blood-brain barrier to trypan-blue and P^{32} was no greater in fœtuses and the newborn than in adults.

J. E. GRUNER (Paris) said that studies with radioactive isotopes had shown that different substances passed through the blood-brain barrier at a variable speed; there was no all-or-nothing law. Water, oxygen, and anæsthetics passed through so quickly that exact measurement had so far proved impossible. Large molecules and toxins seemed not to pass at all. The velocity and intensity of passage varied with the region of the brain: they were greatest in the choroid plexuses, the posterior hypophysis, the epiphysis, the hypoependymal organs—in short, the areas of neuromesenchymatous junction. Topographically passage appeared to be quicker in the cortex than in the white matter, at least as regards sodium and phosphorus. The blood-brain barrier could not be studied without taking into account the blood-C.S.F. barrier.

H. BECKER (Würzburg) declared that both the blood-brain barrier and the blood-C.S.F. barrier consisted of a molecular frame with a stable electric charge. There were only certain quantitative differences between these two barriers. Both might be located in the endothelium of the blood-vessels and/or the *Endothelgrundhäutchen*. Any alteration of pH in blood or brain changed the electric charge and thus the molecular structure. General alkalosis as well as acidosis of the brain tissue severely impaired the barrier, whereas general acidosis and/or rise of pH in the brain tissue enhanced the barrier.

Trauma

SABINA J. STRICH (Oxford) described 5 cases of head injury in which the patients became severely demented and remained so until death five to fifteen months later. The head injury was "uncomplicated" (i.e., there was no clinical evidence of profound shock at the time of the accident or of increased intracranial pressure later, or of fracture of the skull, intracranial hæmatoma, or laceration of the brain). Within three weeks after the injury cough and swallowing reflexes had returned, and the patients had begun to open their eyes. But they remained immobile with severe bilateral, often spastic, hemiplegia, incontinent, aphasic, and unresponsive. At necropsy the brain and its coverings looked remarkably normal. The macroscopic abnormalities were limited to slight to moderate dilatation of the lateral, and particularly the 3rd, ventricles; a few small, old hæmorrhages in the white matter and basal ganglia; and occasional small healed surface contusions and cortical infarcts. Microscopic examination showed an unsuspected degree of damage, which was very similar in the 5 cases. The main lesion was severe diffuse and widespread degeneration of the white matter of both hemispheres. There was incomplete loss of nerve-fibres, which were replaced by a large number of compound granular corpuscles and a few plump astrocytes, but very little fibrous gliosis. There was no evidence of progressive pathological changes. Degeneration of the white matter had isolated large areas of cerebral cortex from each other and from the lower centres; in addition, there was secondary atrophy of the thalamus and more or less severe degeneration in the main sensory pathways. This work had shown that in cases of head injury the white matter as well as the cortex must be examined microscopically.

R. LINDENBERG, R. S. FISHER, S. H. DURLACHER, W. V. LOVITT, jun., and E. FREYTAG (Baltimore, Md) described the pathological findings in 57 cases of blunt head injuries in infants and children. The frequency of contusional foci was low in infant brains and steadily increased in children above the age of 3 years. In the soft brains of infants, however, multiple small hæmorrhagic tears were sometimes seen in the subcortical white matter in predilection areas of cortical centrecoup foci. Death was usually caused by severely increased intracranial pressure, which reached a critical level fifteen to twenty minutes after the accident. If the swelling was survived for several hours or days, extensive tissue necrosis developed in certain areas of predilection, owing to compression of blood-vessels, and this often proved to be of greater significance for the development of the post-traumatic state than did the primary lesions.

A. CHRISTIE LØKEN (Oslo) described the pathological findings in a youth who succumbed after having remained in a state of decerebration for a period of four and a half years following an obstruction of the respiratory tract by a foreign body. The parieto-occipital lobes and the frontal gyri were the most severely damaged parts of the cortex. The thalami were small and shrunken, being replaced by dense glial scar tissue, but the striatum and globus pallidus were relatively spared. There was a centripetal reduction of the cerebellar folia with loss of granular cells: the Purkinje cells on the other hand were mostly normal.

Abstracts of addresses at the congress are published in *Excerpta Medica* (section 8, neurology, 1955, **8**, no. 9).

WORLD CONGRESS OF ANESTHESIOLOGISTS

A World Congress of Anesthesiologists, organised by the Netherlands Society of Anæsthesiologists, was held at Scheveningen, Holland, on Sept. 5–10. Over 800 members from all parts of the world attended and 127 papers were presented. At the end of the congress a World Federation of Societies of Anesthesiologists was inaugurated with 26 countries participating. Dr. H. R. Griffith (Montreal) was elected first president of the federation and Dr. G. S. W. Organe (London) secretary-general.

The following is a brief account of some of the papers.

Hypothermia

Prof. R. W. VIRTUE (Denver) discussed some experimental and clinical aspects of hypothermia. He had found in the dog that neostigmine was of value for preventing and treating ventricular fibrillation, provided it was given so that it reached the coronary circulation. This could be achieved by injection into the aorta above a clamp placed at the base of this vessel. Electrical stimulation of the vagus had a similar beneficial effect. Professor Virtue described a patient who had had the circulation to one side of the brain clamped for half an hour under hypothermia, without ill effect.

Dr. H. C. SLOCUM (Washington) showed how thiopentone and pentobarbitone decrease the risk of ventricular fibrillation in the hypothermic dog's heart. Thiopentone was more effective than pentobarbitone.

Dr. T. C. GRAY (Liverpool) thought that hypothermia could be of benefit in general surgery by conserving the body's responses to stress for the recovery period rather than allowing them to be exhausted during the operation. He and his colleagues had tried to measure in dogs this protection afforded by hypothermia, by assay of adrenocortical-steroid activity and electrolyte changes. Their results showed that the changes normally associated with surgery and anæsthesia were held in abeyance throughout the period of hypothermia.

Dr. B. G. B. LUCAS (London) drew attention to the difference between œsophageal and rectal temperature recordings during clinical hypothermia. The former gave the most accurate measurement of the body-temperature and was usually a degree or two lower than the latter.

Muscle Relaxants

Prof. D. BOVET (Rome) reviewed the history of the synthetic relaxant drugs with particular emphasis on the synthesis of succinylcholine.

Prof. W. D. M. PATON (London) described how the measurement of end-plate potentials had revealed the mechanism of action of the depolarising agents at the neuromuscular junction. He thought that further information about abnormal response to these drugs might come from investigation of the ionic state and local blood-flow at the end-plate, and he showed how potassium is released from muscle after the use of both decamethonium and succinylcholine. The increased concentration of this ion, coupled perhaps with changes in sodium, might well affect motor end-plate reaction. A further point to consider was the interreaction of drugs in this area.

Dr. A. VITALE (Naples) had measured the serum-potassium during several operations, and found a tendency for the level to rise after administration of relaxant drugs and during muscular relaxation. He thought that this indicated an attempt on the part of the muscles to combat the effect of the relaxant.

Prof. W. W. MUSHIN (Cardiff) described a technique for recording the contraction of a muscle (action potential) in response to submaximal electrical stimulation. This was an accurate method for assessing and comparing the effect of relaxants and the degree of relaxation. Groups of muscles were affected in varying degrees, and could be allotted specific frequencies.

Prof. E. A. PASK (Newcastle) described a method of dissociating the peripheral and possible central effects of muscle relaxants. Some clinical observations had suggested that succinylcholine might have a depressant effect on the respiratory centre, but his results did not substantiate this.

Dr. F. F. FOLDES (Pittsburg) discussed the fate of muscle relaxants in the body. Under physiological conditions the course of muscular block depended on the size of the dose and the deposition of the relaxant in the body. After the intravenous injection of moderate doses redistribution from the end-plate into inactive tissue depots was primarily responsible for the termination of the neuromuscular block. After administration of single large doses or repeated smaller doses the tissue depots became saturated and termination of the block depended mainly on the metabolic transformation and excretion of the agent.

Dr. R. FREY (Heidelberg) gave details of a new short-acting muscle relaxant belonging to the curare group—'Prestonal.' It took sixty seconds to work after intravenous injection, was effective for five to seven minutes, and could be antagonised by neostigmine. There was evidence that this agent released histamine, but any effects due to this could be avoided if the injection was made slowly. Dr. Frey said that clinical trials had shown that the drug might prove useful in anæsthetic practice.

Dr. T. GORDH (Stockholm) had made a statistical study of surgical mortality under general anæsthesia in the University Hospital of Stockholm. From 1946 to 1954 the percentage of cases in which muscle relaxants were used had risen from 0 to 35%, but there had been no change in gross surgical mortality. Up to 1951 *d*-tubocurarine chloride was the relaxant of choice, but since then succinylcholine had been used entirely.

Teaching of Anæsthesia

Dr. H. R. GRIFFITH (Montreal) stressed the lack of enough adequately trained anæsthetists to cover the needs of the world. He suggested that proper post-graduate education in the specialty was probably the most important necessity in present-day anæsthesia. Clinical training was of greater value at the moment than research into new drugs or methods. He expressed the hope that international standards of training in anæsthesia might be achieved through the World Federation of Societies of Anesthesiologists.

Dr. N. R. JAMES (Melbourne) also made a plea for the teaching of simple methods in anæsthesia and of the basic care of the unconscious patient. In his country techniques such as the open-drop administration of ether were of greater value for the general practitioner than complicated combinations involving apparatus.

Dr. O. SECHER (Copenhagen) spoke of the anæsthesiology centre in Copenhagen, sponsored by the World Health Organisation and the Danish government. Since 1950 five courses, each lasting a year, of practical and theoretical training in anæsthesia had taken place. Instruction had been given by Danish anæsthetists and by visiting consultants from other countries, the latter being largely drawn from the U.S.A. and Great Britain. Twenty-four countries, including Denmark, had sent doctors to be trained at this centre.

Other Papers

Dr. N. GUARDAGNI (Los Angeles) described clinical experiences of an entirely new intravenous agent in anæsthesia. This drug, 21-hydroxy-pregnanedione sodium succinate ('Viadril') is a steroid and has been shown in animals to be safe for anæsthesia. In 200 clinical administrations Dr. Guardagni and his colleagues had noted several factors which differentiated it from the barbiturates. By comparison with such drugs as thiopentone

there was a noticeable lack of respiratory depression, while tracheal and laryngeal reflexes were almost selectively obtunded. Accordingly it was possible to intubate under the effects of the steroid alone and without the risk of more than slight and temporary glottic spasm. There appeared to be a true synergism between this agent and the opiates. Viadril was probably not just a hypnotic, but a true anæsthetic, and unlike the barbiturates it had analgesic powers. On the debit side it was an irritant, and phlebitis was likely to develop unless the injection was made via an intravenous drip so that the vein was irrigated; and a slight, transient fall in blood-pressure sometimes occurred. Investigations were still in progress but there seemed to be a place for this drug in surgery of the head and neck.

Dr. M. SWERDLOW (Manchester) commented favourably on 'Nisentil,' a new synthetic analgesic, as a supplement to nitrous-oxide/oxygen anæsthesia. Given in repeated doses it was less cumulative than pethidine.

Dr. J. S. CRAWFORD (London), in a paper read by Dr. R. D. Levis, described an investigation into the passage of thiopentone and some muscle relaxants across the placenta in humans. The fœtal serum level of thiopentone was greatest at the onset of anæsthesia and then fell exponentially. In view of this Dr. Crawford considered that the use of thiopentone in obstetrical anæsthesia was safe for the infant and should not necessitate a speedy delivery. *d*-Tubocurarine chloride and gallamine triethiodide had been estimated in cord-serum after administration to the mother; an appreciable quantity of gallamine had been found; the level approached clinical significance, but nevertheless in none of the cases investigated was there evidence of fœtal paralysis. The quantity of *d*-tubocurarine was just assayable and was not of clinical significance. Dr. Crawford concluded that gallamine should not be used in obstetrics.

Dr. H. C. CHURCHILL-DAVIDSON (London) described a case of acute massive collapse of the lungs in which there was no evidence at necropsy of bronchial obstruction from a mucous plug or other mechanical factor. He thought such cases might be explained on the basis of an acute reflex bronchiolar spasm leading to secondary venous congestion in the bronchiolar submucosa and perhaps glandular secretions.

Prof. J. ZAITSEV (Moscow) discussed the practice of anæsthesia in the U.S.S.R. About 75% of all operations were carried out under local infiltration analgesia, usually with procaine hydrochloride. Spinal analgesia was also used. If general anæsthesia was necessary open ether was administered, often over an endotracheal tube. Intravenous thiopentone was also given for minor operations lasting less than half an hour, but a total dose of 1 g. was never exceeded. Professor PSCHENITSCHNIKOV (Moscow) described a technique of local analgesia with procaine for pneumonectomy. The action persisted long enough since the operation took about an hour.

INTERNATIONAL CONGRESS OF CRIMINOLOGY

THIS congress, opened in London on Sept. 14 by the Home Secretary, was the third of its kind, and had more than 400 participants from 44 countries. These were drawn from many sciences, disciplines, and techniques; and, though assiduous in their attendance, they achieved informal and sociable relationships which made the gathering outstandingly successful. Its main topic was Recidivism, but time was found for lectures and communications on a wide range of criminological topics.

In his presidential address Dr. DENIS CARROLL described the congress as concerned with the criminal habitus—the tendency that some human beings show of persisting in crime, whether their crimes be detected or not. Preventive programmes, he said, must endeavour to take into account the very real need to lessen the number of crimes that are never brought to light as well as those whose perpetrators are never discovered and those where the criminal is discovered and properly dealt with. This aspect of the problem has long been apparent to the mental scientist, because, in his ordinary clinical work, he is called upon not only to deal with the detected criminal but also to deal with a wide variety of potentially delinquent, and predelinquent, children as well as adults. He probably knows more accurately than anyone else the number of crimes—detected and undetected—that those whom he examines have committed; and such knowledge is of great value when prescribing treatment and in judging the likelihood of an offender committing another crime.

Yet it must be acknowledged that the psychiatrist and psychologist do not know anything like enough about the significance, for prognosis and treatment, of all the facts they are able to discover. One of the best English studies has shown that only 29% of adult recidivists have official records of convictions as juveniles. Similarly, many juvenile recidivists do not apparently develop into adult recidivists. No-one has solved as yet the problem of complete records: "we really do not know, for certain, whether the unofficial records of these individuals would show the same story as their official records."

In prediction, Dr. Carroll continued, we are relying on the kinds of facts about a criminal's career and antecedents that can be observed fairly easily and reliably, and we are tending more and more to rely on those accurately observable facts which have been statistically demonstrated to be of significance for this purpose. Correspondingly we are tending to depend less and less upon the variety of causal factors which we might assume to be at work in the criminal. In the present state of knowledge, the known characteristics of the individual are certainly of more value in prediction than are known causal factors. But this does not hold true in all the field of our endeavour: "when we do research into causes our attitude becomes inevitably reversed."

"The dramatic results that have been achieved by prediction studies have momentarily overshadowed other approaches to the study of prognosis. Similarly, the great advance that has taken place in the application of statistical mathematics to criminological research, has partially eclipsed the value of qualitative research. But I think it is still necessary to emphasise that, in the last resort, it is the qualitative method that will reveal the true meaning of the probabilities which the statistician reveals."

To the clinician—whether he be a penologist, a social worker, or a mental scientist—the implication from the use of prediction tables that an individual offender has a high probability of a recidivist career has to be regarded as a therapeutic challenge.

In the forefront of modern treatment is the effort to treat the criminal by an all-round attack on all the known causal factors by all necessary biological, psychological, and social methods, including aftercare, follow-up study, and ambulant treatment. No longer is it enough to think of the term "treatment" as implying medical, or psychological, or social, or penal, treatment alone. Group therapy is used more and more in prisons and in clinics in the treatment of offenders of all ages; and though it is superficial as compared with individual psychological treatment, it is often successful where individual treatment fails. Research into the tensions between the individual members of a group and into the tensions between groups of people have helped us to understand why this is so. These researches have led to new methods in the therapy of psychopaths, and they have also given insight into the extremely difficult problems of morale in prisoners and prison staff.

"I cannot help feeling that, in time, they will also help to solve some of the vexatious problems of short-term prisons.

The short-term sentence is so frequently unsatisfactory that it must rank high on any list of necessary researches. Such research would, surely, result in reform; but not in the abolition of the short sentence."

It is a fitting moment (concluded Dr. Carroll) to recall that the trend of modern penology is towards leniency, liberty, and prolonged aftercare.

"Inevitably mistakes must occur and avoidable crimes be committed. But such incidents are comparatively few. What is more, they are fewer than they would be in a harsher system. But it is not surprising that public anxiety is aroused from time to time. It is well to have a wise administration that is also capable, when necessary, of withstanding the pressure of such anxiety. Public over-anxiety is the father of excessive preventive action. The remedy for public anxiety is that the public be well informed. There is a need for public education and ever more education in our science and in our practice. Yet we must be ever mindful of the need for social security. We must keep in mind, too, the need to respect human rights.

"Indeed, in all these matters affecting our treatment of antisocial persons we must ensure that our efforts to reform the offender do not offend against humanity. Nor must zeal for reform lead us to outrage our sense of justice."

Prof. S. GLUECK (Harvard) and Mrs. GLUECK produced evidence in favour of their view that criminal tendencies are related to physical type. Compared with controls drawn from the same under-privileged areas of Boston, a group of persistent delinquents showed twice as many mesomorphs.

Prof. MARSHALL B. CLINARD said that, as a group, criminals cannot be distinguished from non-criminals solely in terms of sociology or of mental or physical attributes. He advocated studies of the relationships of crime with urbanisation and with class structure, and argued that future criminological research should cover the violation of contracts over a far wider field than the criminal law.[1]

WORLD FEDERATION FOR MENTAL HEALTH

THE annual conference opened at Istanbul on Aug. 22 under the presidency of Dr. FRANK FREMONT-SMITH, medical director of the Josiah Macy jun. Foundation, New York. The aim of the federation, he said, was to promote among all peoples and nations the highest possible level of mental health in its broadest biological, educational, and social aspects—in short, to ensure the peaceful use of human power. This was a herculean task; but the success of the conferences held in many countries since the federation was founded in London in 1948, under the presidency of Dr. J. R. Rees, showed the world-wide and growing interest in it. Fear, prejudice, hostility, or excessive nationalism were deeply embedded in human personality; but happily the social sciences had also come to recognise the plasticity of human behaviour and of social institutions, as well as their resistance to change. Change could be possible provided it was handled wisely and suited to the various stages of development of different peoples. Principles of mental health could only be established in a society where there was progressive acceptance of the concept of world citizenship. To be effective, programmes for social change required the joint efforts of psychiatrists and social scientists working with statesmen and administrators and others in positions of responsibility—especially those concerned with human relations. It was essential to strengthen the scientific basis of the work and not merely to remain as well-meaning amateurs in the field of mental health.

Speaking on Mental Health and the Upbringing of Small Children, Dr. KENNETH SODDY (London) laid stress on the importance of the right kind of love relationship between the very young child and its mother. Without this relationship the child became apathetic and depressed, seemed to lack any incentive to develop or even to go on living, and usually failed to make a satisfactory emotional adjustment to life. It was also extremely important that there should be a father figure in the child's life, so that it should have an opportunity of sharing its love and also of adapting to both the male and female personality pattern. Harmony between the parents themselves was essential since quarrelling parents not only created a conflict of loyalties for the child but also made it learn to distrust its parents and lose its respect for them. He spoke of the small child's great fear of being abandoned or of losing its mother, and discussed the question of admitting small children to hospital. Behaviour difficulties and scholastic retardation were often an expression of emotional maladjustment due to disturbed relationships between the child and the mother or the family group generally. Since the foundations of mental and emotional stability had been proved to lie in the home background and in the child's earliest months and years of life, this should be the focus both of research and of practical measures.

Dr. RENÉ SPITZ (New York) presented his latest film on the effects of emotional stress on small children. His investigations in a foundling home provided dramatic evidence of the mental and physical damage resulting from failure to establish a personal love relationship.

Dr. PACHECO E SILVA (Brazil) pointed out that sexual harmony was the master-key to a happy marriage and that many alleged reasons for broken marriages were really concealing the fact that sexual conflict was at the base of it. He advocated a full physical and psychological investigation of couples about to marry.

Dr. ANDRÉ REPOND (Switzerland) spoke of the guilt feelings of the parents who have an abnormal child. This frequently expressed itself either in over-devotion and possessiveness, by way of compensation, or in repugnance and rejection. In particular, he thought that the maladjustment of the mental defective was often largely due to the family reaction.

Dr. DORIS ODLUM (London) referred to the Association for Parents of Backward Children recently formed in the United Kingdom, largely under the auspices of the National Association for Mental Health. This was helping parents to realise that they were not alone in their problems and helping to relieve them of their feelings of isolation and social rejection. Holiday homes had also been started where psychologically handicapped children could go for five or six weeks to relieve their parents and afford them a valuable change of outlook.

EUROPEAN LEAGUE FOR MENTAL HYGIENE

Dr. DORIS ODLUM presided over the conference held at Istanbul on Aug. 20, at which the subject for discussion was the Mental Health of the Family when the Mother Goes out to Work.

Dr. PAUL SIVADON (France) spoke of the age-long prejudice which existed in relation to women's work outside the home, especially on the part of their husbands, but said that the industrialisation of the community made it essential for a large number of women to work. In France, as in other countries, the change began some fifty years ago, and had proceeded with accelerating momentum; it was likely to progress still further and nothing could be done to arrest it. In the evidence received by a working party of the French League for Mental Hygiene the conflict focused on two principal points: (1) how a woman could carry out the responsibilities of outside work without neglecting the responsibilities of motherhood, and (2) how she could achieve greater independence without upsetting marital relationships. In point of fact, experience already showed that the work of women outside the home favoured their

1. *Times*, Sept. 17, 1955, p. 4.

personal development and often made it possible for her to fulfil both her maternal responsibilities and her rôle as a married woman more satisfactorily. But the rapid evolution of this new social rôle demanded an effort of adaptation, for which the nervous constitution of many women was at present ill-equipped. In the opinion of the working party, this showed itself in the higher incidence of nervous disorders in female than in male workers. The greater absenteeism among women was largely due to the competing demands of the family, but even more to the fact that the woman was often doing uninteresting work without any training. Among those in skilled and professional occupations absenteeism was very much less. The mother's rôle in the family could be helped by better education in housewifery and in the use of modern techniques and also in her functions as a mother, and also by development of the home help system and of the homely type of small day-nursery. Social legislation should ensure for her an adequate period of rest before and after childbirth, and employers should be encouraged to rearrange work schedules so that she could work for a limited number of hours a day or spread her work over hours that would be compatible with her duties as a mother.

There was no evidence that the wife's work outside the home was a factor in the break-up of marriage. In many cases the marriage relationships were better than in those of the non-working woman. Some 22% of French women were working, and 19% of married women; so marriage did not seem to prevent women working. There was considerable evidence that the absence of the mother from the home for a certain number of hours a day was not damaging to the child, provided that her personal relationships with it were good. This seemed to be the key factor. There was on the contrary much evidence that the home-keeping women had not necessarily better relations with their children and that they tended on the whole to be more possessive and more irritable with the children, as shown by the number of punishments inflicted.

Public Health

Poliomyelitis

UNCORRECTED notifications of poliomyelitis in England and Wales during the week ended Sept. 10 (36th week) were as follows: paralytic 206 (206), non-paralytic 252 (192); total 458 (398). (Figures for the previous week in parentheses.)

In the six years since 1950 notifications, and the proportion of paralytic cases, in the 36th week have been as follows: 1950, 519 (63·7%); 1951, 86 (54·7%); 1952, 187 (61·2%); 1953, 173 (53·2%); 1954, 78 (60·3%); 1955, 458 (45·0%).

The proportion of non-paralytic cases in the week ended Sept. 10 was the highest recorded in any week this year; and, except for one week in 1951, it was the highest in any week since 1950 when the two types were first notified separately. In Middlesex and Essex, and to a lesser extent in London and some sixteen other counties, non-paralytic cases materially exceeded paralytic.

During this week there were notable increases in the London and South Eastern regions—mainly in Greater London—and in the Southern, South Western, and Midland regions. There were decreases in the East and West Ridings, the Northern region, and Wales.

Hitherto this year the approximate incidence in England and Wales has been 7·8 per 100,000. The following counties have had the highest rates (approximate figures per 100,000): London, 16·9; Essex, 14·4; Middlesex, 14·0; West Riding, 14·0; Isle of Ely, 13·5; and Bucks, 12·2. In London the following boroughs have had incidences of over 25 per 100,000: Stepney, Southwark, Poplar, Lewisham, Shoreditch, and Hammersmith.

The Ministry of Health suggests that "a seasonable fall in the next week or two can be hoped for."

In England Now

A Running Commentary by Peripatetic Correspondents

THE OUTCAST

I'm not like other people are,
I'm bad.
I'm worse than other sinners, far.
I shall go mad.

I'm wicked and I want to die;
I'm evil and I don't know why;
I've done a wrong, I don't know now
What I have done; it's such a sin
I can't explain, I can't begin.
I'm much too vile for you to know;
I know I'm wicked, tell me so,
Tell me to leave, don't let me stay,
Punish me, send me right away.
But oh, oh, oh,
Don't let me go.

I wish I could remember.
There was something important that I had to tell you,
Something that happened last December,
Something . . .
Are you fond of cats?
Please, please say that you like cats too.
You do?
I had a kitten once, I called it Cherry . . .
What was I going to say just now
Before I forgot?
If only I could be just a little happy now and then,
I would like to dance and be merry,
And dance, dance; anything used to make me dance
once, everything.
You don't hate me, do you? You ought to. That's
Why I shall have to tell you, only when
I do, you'll never speak to me again,
And—I love you such a lot.

The river is so bright and deep,
I long to drown myself and sleep.
I cannot sleep, I get no peace,
My thoughts go round, they never cease;
I think and think, I can't forget.
I'm bad, so bad. Oh, please don't let
Me come again. I oughtn't to.
But I've got no one, only you
To talk to. Punish me, I'm bad;
Send me away, please, I'd be glad.
But oh, oh, oh,
Don't let me go.

* * *

In North America no-one ever walks now. Civilisation rests on the idea that everyone has a car, and uses it, and prefers to stay in it. The chief shopping stores are built out in the suburban countryside and not in the centre of the town, so that plenty of space can be left for the parking of the hundreds of cars of shoppers. Cinemas, too, are large screens set in the fields, and you drive in, are attached, in your own car, to a loud-speaker relaying the sound track, and there you sit watching the film. This drive-in principle has now spread to restaurants, banks, and churches, and Vancouver is building a new general post-office that will allow you to drive in to deal with your postal problems. The only place where anyone seems to walk is the golf-course, and even there I am sure that a fortune awaits anyone who could mechanise the golfer's trolley so that it would carry the golfer as well as his clubs.

* * *

It's simple enough to cure car-sickness in ordinary patients; a pill before starting, a few words to an apprehensive mother, and as often as not even the most acidotic of infants will guzzle cream cakes, cucumber sandwiches, crystallised fruit, and what have you from Land's End to John o' Groats with no come-back. It may be faith, it may be the pill, but whatever it is it never works with relations.

The resources of the whole of the *British Pharmacopœia*, threats of orange juice only for breakfast, barley sugar to suck, wireless at full blast, sitting in the front, sitting

in the back, standing on the seats with heads through the sunshine roof—all these efforts only resulted in green-faced passengers and a fibrositic driver. Something had to be done; and, if medicine couldn't cure, magic must. A chain was suspended from the back axle on the near side and left to drag along the ground behind us, and with it went our troubles. It may be something to do with static electricity; it may be pure magic; but now we can drive from the town to the tors, from the coast to the common, with contented passengers merely demanding more food when before they demanded more basins. True, my expenditure on ices, lollies, chips, and the like is well above average, but I've proved to the family that sometimes I can cure even them.

* * *

The first thing I do when I get my copy of *The Lancet* is to study the contents page. It fascinates me to see what the clever types have dreamed up, even though I can't cope with the actual articles. Take Aug. 13, for example. "Spectral Phonocardiography." Who on earth would have thought of taking a phonocardiogram of a spectre? Perhaps nobody on earth. *The Lancet* may have to alter its subtitle to "a Journal of British, Foreign, and Extra-terrestial Medicine." I suppose the spectres which moan would have interesting chest sounds, but on theoretical grounds I would not have expected much to interest a cardiologist. Their well-recognised pallor, too, confirms this point. If I am wrong, though, there would be much of circulatory interest in the region of the neck, especially in those who have their heads hooked under their arms.

But how silly of me. It can't mean that at all. It would be too difficult to fix the leads on a spectre. I expect the annotation deals with the experiences of a cardiologist in private practice, who was called to see a decaying nobleman in his decaying castle. Bizarre waves appeared on the machine. Hastily clapping his stethoscope onto the noble chest, the cardiologist was alarmed to hear, not lub-dupsh, but ancestral voices full of foreboding. As the Influences became stronger, so the cardiograph began to rattle, its pen tracing out revelations like a planchette. Yes, that would be it.

* * *

Talking (if we were) of grateful patients, here is the answer I got to my second appeal to Mrs. X to bring her offspring to the premature-baby follow-up clinic:

Dear Sir,

In answer to your note, yes, I received the note last week; but as we have no intention of bringing my daughter to——, I did not answer. But anyway she is strong and healthy no thanks to the hospital but due to the care my mother and I gave her when she came home. We did not go by the diet which was sent home with her but put her on a proper diet which suited her and she made headway fast and another thing she was a full time baby, not premature. Another thing she would never have come to the hospital if we had known the nursing home staff were going to send her after they starved her because they would not change her diet, they sent her without our consent. We should have had her home instead also I should like to say I think she must have slept in a wet bed all the time she was there. It took a lot of ointment and baby powder to get her alright also you need not write again as I shall not answer. She has never been to any of these so-called clinics and never will.

Yours, (Mrs.) X.

* * *

Greenland is a more civilised place than I had realised—or so I thought from my first reading of p. 494 of *The Lancet* of Sept. 3.

There has also been great political advancement, and Greenland is to play "away" matches with outside teams in a local league. Members of borstal staffs are more specialised than they would have been thirty years ago . . .

For one who spent half an hour looking for the extra words in the observer error example ("Paris in the spring"),[1] it was all too easy to invent the word "is" and to fail to notice the horizontal line separating The Wider World from the preceding article on the narrower world of our prisons.

1. Johnson, M. L. *Lancet*, Aug. 27, 1955, p. 422.

Letters to the Editor

PROFESSIONAL RESPONSIBILITY

SIR,—Your leader last week, and Dr. Sherwood's letter in the same issue, deal with a question of great importance; but I do not think that your leader fully explores it, nor that the alternative solutions you propose are either of them practicable. Even if it were possible to persuade Parliament to pass a statute removing the liability for a doctor's negligence from the hospital authority, and fixing it solely upon the doctor, I am advised that the doctor would then probably be held legally responsible for the acts of nurses and others working under his direction. And it is surely most unlikely that any political party would agree to a proposal to pay doctors through a professional guild, which was canvassed and rejected in the discussions before the Health Service was set up.

The difficulty arises from the fact that the hospital doctor has two obligations—his professional duty to his patient, and another to the hospital he serves, which you somewhat lightly dismiss by saying that doctors "regard themselves as nobody's agent and nobody's servant but their patients'." Even before the Health Service was introduced a doctor holding an honorary appointment surely felt that he was in the best sense the servant of his hospital. The question is whether these two obligations are, as you think, mutually incompatible. I believe they are not, provided, first, that each is clearly defined, and, secondly, that the distinction is accepted by the Minister of Health and his agents in a form that can be applied to any particular case.

What, then, is the distinction? Surely it is clear enough. A doctor's professional duty to his patient is to treat him to the best of his own judgment—subject only, if he holds a subordinate post, to the direction of his professional chief—and to observe the standards of professional ethics. In neither of these spheres has the Minister, or any regional or hospital authority, the moral right to interfere; and the Hospital Management Committee quoted by Dr. Sherwood offended in both respects.

A doctor's obligation to his hospital authority is to carry out faithfully and competently the work for which he is paid; but, even if his competence is called in question, this is a matter for medical inquiry.

The Joint Consultants Committee, in approving the arrangement by which the hospital authorities share with the doctor the defence against a charge of negligence, did not consider that this involved the professional direction of doctors by the authorities; and I am advised that there is no legal basis for such a view. The risk, if indeed it exists, would be obviated by the Minister's acceptance of the distinction between the doctor's duty to his patient and his obligation to his hospital authority, which I have outlined in this letter.

W. RUSSELL BRAIN
Chairman,
London, W.1. Joint Consultants Committee.

REGISTRARS

SIR,—Surely the time has come to take a definite step towards solving the registrar problem. In last week's letter by "Ex-Registrar" a plea is made once more for easier entry into general practice or other specialties; but why not give these men a chance to prove their worth within their own field?

If the consultant service cannot be expanded to accommodate the excess of senior registrars, surely, to counter the present shortage of junior staff, many could be employed as assistant surgeons or physicians. Such posts need not require any more salary than the present top grade of senior registrar; but they should entail a few beds, a small outpatient session, and, most

important of all, the right to private practice. I realise that these conditions could not apply in all cases, but they would certainly be possible in most peripheral hospitals. I am sure that such "assistant consultants" would eagerly accept the responsibility for emergency surgery, &c., in return for the advantages of security of tenure, promise for the future in joining the senior staff as their senior colleagues retire, and, more important, the opportunity to augment their income by private practice. If these men are as good as they imply, this would be their chance to prove it. If not, then at least they can have no cause for complaint.

It seems to me that this arrangement would not only satisfy the present unfulfilled demand of many hospitals for skilled men to do the routine work but at the same time, by providing adequate inducement, would attract more recently qualified doctors of suitable calibre to take up the major specialties. This in turn would be reflected in a rise in the number of applications for house-officer posts in smaller hospitals which at present have difficulty in filling their establishments.

From the Government's point of view this plan would surely be welcome since it would solve at least some of the Ministry's problems without costing more money.

Stoke-on-Trent. W. SEWELL.

SIR,—"Ex-Registrar's" letter last week touches only one facet of the problems confronting the "trainee specialist." It is a discouraging fact that registrar posts are of strictly limited tenure; thus every two or three years one faces the upheaval of a move (particularly so if married, nor is there a disturbance allowance or free removal of effects), and the sordid and unpleasant task of applying for jobs. Why is it that the desirable posts always fall vacant at the wrong time?

This does not make sense from the hospitals' viewpoint; as time goes by a registrar becomes progressively more useful. It should be left to the individual to decide when the time is ripe for him to move on: he is best equipped to judge. A possible solution would be a flexible system of semipermanent appointments to the more junior posts, with promotion prospects within a region if not in any one hospital. Ideally this should be combined with "time off" to attend courses for higher degrees; as a corollary, the present full-time diploma courses should be extended to include part-time students. (I am thinking particularly of such diplomas as the DIP. BACT. and the D.P.H.) This is already the case in enlightened industry.

Discussion often takes no account of the fact that the fundamental reason for specialisation is (or should be) a desire to work in a particular field of medicine, and not an ambition to attain a certain arbitrary status. Hence S.H.M.O. or a similar grade is a logical and necessary stepping-stone to consultant rank, and not a blind alley. Time spent in such a post is not wasted, for valuable experience is gained. Promotions to consultant should normally be made from the S.H.M.O. ranks. This would solve many problems and redress many grievances.

REGISTRAR PATHOLOGIST.

SLIPPED FEMORAL EPIPHYSIS

SIR,—I should like to associate myself with Mr. Newman's remarks (Sept. 10) on your annotation of July 30.

From the point of view of treatment, cases may be separated into two groups: the acute slip and the chronic slow one.

The acute slip resembles an acute fracture and is treated as such. Reduction by gentle manipulation and then fixation with Austin Moore pins is probably the best form of treatment. I also do not favour the Smith-Petersen nail on account of its bulk and because sometimes it is not easy to drive in.

It is the chronic slow type of slip that gives rise to most difficulty in treatment. If the degree of slipping is not marked, and pressure is possible, I am content to accept the position and fix it with Austin Moore pins. If it is more than this I favour subtrochanteric osteotomy. My colleagues and I have encountered avascular necrosis following cervical wedge osteotomy often enough to realise that it is not a remote possibility; and I think this has been the experience in other centres also.

Exeter. F. C. DURBIN.

MORPHINE AND PROPANTHELINE IN INTRAVENOUS CHOLECYSTOGRAPHY

SIR,—I read with interest Dr. Sangster's article of Sept. 10. Since the introduction of 'Biligrafin,' many workers have tried various techniques for constricting the sphincter of Oddi. I feel that in patients with the post-cholecystectomy syndrome it is important to investigate the function of the sphincter of Oddi. A technique aimed at closing the sphincter seems to me erroneous. When the initial examination is made, if there is too rapid drainage of the biliary tree the examination may be repeated using pethidine or morphine in an attempt to close the sphincter. If, on the other hand, there is no drainage through the sphincter, this can in some cases be initiated by inhalation of amyl nitrite. I hope later to report the results with this method, which I have so far used in only a few cases.

In view of the severe reaction which I observed in a patient to whom 30 ml. of biligrafin was administered,[1] in common with most other English workers I now use only 20 ml., and have found this quite adequate.

Harrogate. M. W. P. WARD.

THE DEATH PENALTY

SIR,—May I reply to the points made last week by Dr. W. B. Gough?

(1) He states that it is right to execute a murderer because the alternative of long-term imprisonment is inhuman. This argument is obviously false; if it were true, one wonders why anybody should ever have thought of the system of reprieve. Why is there almost always an effort to secure a reprieve once a murderer has been convicted? Why does not the Home Secretary order an especially quick execution in any case where mercy is indicated rather than recommend a reprieve followed by the cruelty of a long imprisonment? Obviously it is because prison is rightly felt to be preferable to death.

(2) Dr. Gough mentions "the degrading occupation of warding the prison population." But it may well be thought that the most degrading work in prisons is connected with the grim rigmarole of the condemned cell and the execution—"to give attention and some inevitable measure of sympathy to a tragic fellow creature for weeks and then one morning, in cold blood, reduce him to a corpse," as Margery Fry has put it.

(3) On an average in this country about 12 murderers a year are executed; if they were imprisoned, Dr. Gough thinks that "large numbers of our fellow creatures" would be needed to stand guard over them. But it is hard to understand why one more prisoner a month in our crowded prisons poses any extra problem. Indeed, the very contrary was indicated in the debate in the House of Commons on Feb. 10 this year, when Mr. Chuter Ede said, referring to the present Home Secretary:

"I hope that his experience will agree with mine that the ordinary murderer who is reprieved is among the mildest mannered and best behaved inhabitants of Her Majesty's prisons and presents very little difficulty indeed. He generally falls in fairly well with prison routine, is reasonably helpful and can generally be regarded as a person who, after a period of punishment that is, in his case, probably more retributive than reformative, can be released on society and is unlikely to give us any further trouble."

1. Ward, M. W. P. *Lancet*, 1954, i, 887.

(4) It seems extremely ill-advised to call those who are distressed at the spectacle of executions "silly people" when one reflects that this includes the inhabitants of over thirty countries who have safely abolished the death penalty (and regard it as a barbarous survival in this country), and well over 200 M.P.s here with growing public support.

Harpenden, Herts. CONRAD ASCHER.

SIR,—Mr. Kisch (Sept. 10) asks "Is Dr. Whitty right?" One might very well reply "Is Mr. Kisch right?" If, as he says, the primary objects of the death penalty are (1) to punish the criminal, and (2) to prevent the culprit from repeating the offence, the death penalty should logically be extended to all serious forms of crime, and perhaps to less serious forms as well. The prisons would be nearly empty and the community saved a tremendous expense. However, I doubt whether even Mr. Kisch would advocate this return to the justice of the Middle Ages.

Arlesheim, Switzerland. A. M. WOOLMAN.

INTERMITTENT POSITIVE-PRESSURE RESPIRATION

INFORMATION WANTED

SIR,—While the introduction of I.P.P.R. (intermittent positive-pressure respiration) has saved the lives of many otherwise hopeless cases of bulbar poliomyelitis, it has also become apparent that the use of this method should reduce the mortality of diseases such as acute polyneuritis and tetanus (with curare) to almost nil. Cases of respiratory insufficiency after chest operations, respiratory arrest after anæsthesia, and drug poisoning have also been handled with benefit by this method.

In order to collect information regarding the type of case which responds to I.P.P.R., those in charge of such cases are invited to exchange with us particulars of patients treated.

Respiration Unit,
Radcliffe Infirmary,
Oxford.

W. RITCHIE RUSSELL
A. CRAMPTON SMITH
J. M. K. SPALDING.

SEQUELS TO ANÆSTHESIA

SIR,—Dr. Bedford is to be sincerely congratulated on his splendid article (Aug. 6). I believe this paper should be regarded as a classic in anæsthesia literature, to be read and reread by every practising surgeon and anæsthetist and every trainee in these disciplines.

There are, however, two points in this paper on which I wish Dr. Bedford had not made quite such dogmatic statements. Nitrous oxide and its relation to adverse cerebral effects is one, and his total condemnation of induced hypotension is another.

In view of the voluminous correspondence which has since appeared in these columns with regard to the absence of deleterious effects on cerebral function of nitrous oxide in the presence of adequate oxygen, I do not wish to dwell upon this, other than to say that I wholeheartedly support the views expressed by the many colleagues who have written on this subject.

No-one would dispute that induced hypotension, by whatever method it may be achieved, carries an increased risk for the patient, of which adverse cerebral effects are probably some of the most important. Hence, this method must be reserved for those patients where the indications are compelling and where the risk of potential cerebral injury is far outweighed by the advantages gained, or by the risks incurred in not inducing hypotension. I have stressed this again and again in publications, and I have also said that in elderly patients induced hypotension is quite rarely, if ever, indicated. There are, however, cases in all age-groups where it is definitely justifiable to use hypotension, being fully aware of the inherent risk. The indiscriminate use of this technique is never justified.

May I in conclusion heartily endorse Dr. Bedford's views on the dangers of narcotics and barbiturates in these old people; they are dangerous agents indeed.

Department of Anæsthesia,
University of Saskatchewan,
Saskatoon, Canada. GORDON M. WYANT.

SIR,—May I make a plea for a return to sanity with regard to nitrous-oxide and oxygen anæsthesia? Much has been written in these pages about its shortcomings, and few of us would deny these. However, many thousands of gases are given each week in this country, many by inexperienced administrators, yet Dr. Bourne has to "advertise" for information on its adverse effects.

It cannot be denied that cyclopropane and oxygen gives smoother and more satisfactory conditions for the operation in the hands of the expert, but the expert anæsthetist is not usually available to carry out the daily routine anæsthetics in the dental chair. The virtue of nitrous oxide has always been its safety, and the simplicity of the apparatus required for its administration. If the more dangerous cyclopropane is to be used routinely instead of gas Dr. Bourne will not have to hunt so diligently for evidence of its ill effects.

Emsworth, Hants. P. F. M. MACDONAGH.

TIEMANN'S CATHETER FOR BLADDER DRAINAGE

SIR,—I would agree with Dr. Lakin (Sept. 10) about the value of Tiemann's catheter for bladder drainage. His modifications to hold the catheter in place are ingenious.

We have overcome the difficulties he describes by having an inflatable balloon placed near the eye of the Tiemann's catheter to make it self-retaining, as in Foley's catheter. We have found this of great value.

This modified Tiemann's catheter was made for us by Willi Rusch, whose agents are Willen Brothers, of 44, New Cavendish Street, London, W.1.

Department of Urology,
Newcastle General Hospital. JOHN SWINNEY.

TOXIC PSYCHOSIS WITH NEUROLOGICAL FEATURES DUE TO METHYLPENTYNOL

SIR,—In his interesting article on this subject (Sept. 10) Dr. Marley describes the case of a female patient presenting with the features of a toxic psychosis combined with neurological signs, caused by methylpentynol and clearing up rapidly after discontinuation of this drug.

Most of the features observed in this patient were also present in a number of alcohol addicts who, while refraining from taking alcohol, had taken methylpentynol in grossly excessive doses (e.g., 20–30 250-mg. capsules per day) for several days.[1]

The 15 patients included several women. Most commonly they showed (or described) a syndrome consisting in gradually increasing confusion with lack of concentration and attention, tearfulness, depression, speech difficulties, and ataxia, and finally complete inability to walk or stand proceeding to increasing drowsiness. 1 patient stated that he had seen double before admission; visual hallucinations were described by another man; nystagmus was noticed in 1 female patient, and slight ptosis in another male.

As Dr. Marley remarks, some of these cases resembled chronic barbiturate intoxication (which was seen by us in several other alcoholics who had given up drinking). As far as drowsiness, ataxia, and slurred speech are concerned, our cases correspond to those mentioned by May and Ebaugh.[2] On the other hand no patient mentioned or showed any skin lesions of the sort recorded by DeLamater.[3]

1. Glatt, M. M. *Lancet*, 1955, i, 308.
2. May, P. R. A., Ebaugh, F. G. *Amer. J. Psychiat.* 1953, **109**, 881
3. DeLamater, J. N. *Calif. Med.* 1952, **77**, 339.

Apart from the cases, already mentioned, of overdosage continued over a number of days, there were a number of others in which the patients had taken an acute overdose (usually 25 capsules). One man, an obese alcoholic psychopath, took three bottles of a methylpentynol elixir (containing altogether 18·75 g.) at the same time, having taken capsules for some months. All of these patients made a spontaneous recovery, as in the case described by Dr. Marley.

Warlingham, Surrey. M. M. GLATT.

SIR,—I was interested in Dr. Marley's article on Toxic Psychosis with Neurological Features due to Methylpentynol. I saw a similar case in a patient who had inadvertently ingested 10 g. of methylpentynol during a period of two days; in addition he had had phenobarbitone gr. 2 nocte for twelve days.

When seen one day after stopping the drugs the patient complained of double vision and unsteadiness on walking. On examination there was rhythmic nystagmus on conjugate lateral gaze, right ptosis, increased deep reflexes, positive Hoffmann's and Wartenberg's signs, plantar responses equivocal, heel-to-shin sign positive, Romberg's sign negative, cerebellar ataxic gait, no dysarthria. Urine normal.

He was over-talkative and excited, and during the night of his second day on the drug he had disturbed the house by noisy behaviour.

Thornton Heath. GEOFFREY HIRST.

THROMBOPHLEBITIS AFTER INFUSIONS

SIR,—Your leading article of Sept. 10 will be of great benefit to all patients needing venepuncture if the basic principle is generally adopted. In 1947, when a house-surgeon, I saw a young man who in the mill of much thoracic surgery had gained 27 scars of cut-downs.

You remark that no one vein should be used for an infusion for more than 8 hours. (I myself observe a limit of 12 hours.) Ringing the changes in this way has the great advantage, which you do not mention, that after an interval of 18–24 hours the same vein can be used again. So if three veins are mapped out the infusion may be kept going indefinitely.

Another important point is the size of needle. I would say that 23 B.W.G. is quite large enough for most purposes.

Stratford-on-Avon. M. H. F. COIGLEY.

SIR,—I read your leading article with much interest.

Fashions change, not always for the better. In my operating days I always gave two pints or more of subpectoral saline in operations for abdominal emergencies and in severe pelvic operations. The needle was inserted as the patient lay anæsthetised and the infusion was continued during the operation. I never had any complications from this practice and must have used it hundreds of times. Still more archaically we used rectal salines.

Great Yarmouth. LEONARD LEY.

POLISHED FLOORS

SIR,—I was glad to read the letter last week from Mrs. Haslewood, writing apparently from the patient's viewpoint. I wrote on this subject in the *British Medical Journal* on Feb. 25 of this year; but I fear that the medical profession accept the slippery floor menace with complete apathy—mainly I suppose because most of them are able-bodied and can recover from a slip without damage. I have this year had two cases of convalescent pulmonary tuberculosis transferred to the orthopædic unit at this hospital, both of them having fractures of the femur through slipping on ward floors.

It seems that unless doctors take some stand in the matter, hospital architects and ward-cleaners will happily continue to provide us with dangerous floors resulting in a regular flow of limb fractures.

Colindale Hospital, London, N.W.9. W. E. SNELL.

ILIO-INGUINAL BLOCK DISSECTION

SIR,—Circumspect though the minor specialist must be in the presence of the major consultant, I am nevertheless perturbed at Mr. Downie's "correction" of Mr. Stanley Lee's interpretation of the cause of skin sloughing in ilio-inguinal block dissection.

I pass through the saphenous opening on a number of occasions each week, dividing two of Mr. Downie's vital spokes—the superficial external pudendal and superficial epigastric arteries—on my way to the sapheno-femoral junction: and yet the resulting groin wound heals perfectly in seven days with no more aid than that afforded by a subcuticular suture.

But if the skin adjacent to the wound edges was "very thinly dissected from the underlying fat" the story would be very different. Surely Mr. Lee's explanation is the correct one.

London, W.1. STANLEY RIVLIN.

TRACHEOTOMY IN ACUTE RESPIRATORY EMBARRASSMENT

SIR,—Dr. Pitman and Dr. Wilson are to be congratulated on their article (Sept. 10) proposing a wider use of tracheotomy.

The following corroborative case, which occurred in 1948, may be of interest.

A stout, short-necked man of 28 had been operated on by a colleague for primary toxic goitre. Three days later he had a large reactionary hæmorrhage and was taken by the R.S.O. to the theatre, where the wound was opened and for an hour attempts were made to stop the bleeding.

I was summoned urgently and found the patient practically moribund, still bleeding from the right upper pole. A luckily placed suture stopped the bleeding, and the anæsthetist removed his endotracheal tube, nothing but oxygen having been given for some time. The patient immediately assumed the appearance described in the article: his tongue fell back, his lower jaw sagged, a tracheal tug was present, and his pulse was imperceptible. Clearly more than the usual nursing was required, so I performed a tracheotomy.

The patient's subsequent progress was entirely satisfactory. I consider that but for the tracheotomy he would have died of a combination of operative shock, exsanguination, and thyrotoxicosis.

Salisbury. ALEXANDER DUFF.

TONSILLECTOMY WITHOUT TEARS

SIR,—I shall not enter into this discussion about the humane preparation by our anæsthetist colleagues of children for tonsillectomy. It is their business to continue to explore the field of premedication which for my patients they have done with great patience and skill. But I should like to join Dr. Belfrage in his remarks last week about proceeding afterwards to intratracheal anæsthesia.

I believe the modified double-bladed hæmostatic tonsillectome of La Force to be the most merciful instrument for tonsil removal in the child, and so we are able to dispense with the intratracheal tube whilst keeping the mouth open with a rubber-cushioned Mason's gag applied carefully between the molar teeth.

Where dissection of the child's usually mobile palatine tonsil is preferred I should like to think that it is rarely

necessary to employ a combination of the Boyle-Davis gag and the intratracheal tube.

For complaints of sore throat after operations outside laryngology in adults I need not go beyond my own family and friends. It may be difficult for the child to discriminate between laryngeal and post-tonsillectomy soreness, but an alteration in the voice would of course be diagnostic.

Liverpool. H. V. FORSTER.

RESISTANT TUBERCLE BACILLI

SIR,—The report in your last issue by Dr. Murdoch and Dr. Grant of a case of pulmonary tuberculosis due to bacilli resistant to streptomycin and isoniazid is of great interest, particularly since the bacilli were of low virulence for the guineapig. Unfortunately, however, the authors provide no definite evidence that the organisms responsible were tubercle bacilli.

There are reasons to believe [1] that chromogenic and other atypical mycobacteria may occasionally be pathogenic in man. Such strains are of low virulence in guineapigs and may sometimes be difficult to distinguish from tubercle bacilli, particularly when grown on the usual egg media. We have found them usually about as resistant to isoniazid and streptomycin as those reported by Murdoch and Grant, but they are frequently also resistant to *p*-aminosalicylic acid. It is a pity that the bacteriological identification was not completed, for instance, by subsidiary studies on the colonial morphology on agar medium, cord formation, catalase production, temperature requirements for growth, and Mantoux testing of the guineapigs.

Postgraduate Medical School of London, W.12 D. A. MITCHISON
J. B. SELKON.

SPECTRAL PHONOCARDIOGRAPHY

SIR,—Your annotation of Aug. 13 did a good job of explaining the principle of spectral phonocardiography and describing the type of information supplied by it. The question of the usefulness of the technique is justifiably raised, and with equal justification it is pointed out that the method is still young—less than two years old in actuality. A preliminary report [2] from the group in Philadelphia using the same method was overlooked, probably because of the use of an unfortunate designation, "cardiospectrograms," which provides no indication of the relation to conventional oscillographic phonocardiography.

Two further publications [3 4] by the Johns Hopkins group illustrate applications of the method. Certain possible virtues of the technique, not mentioned by your note, deserve comment.

In a study reported in July [3] this basic method of sound portrayal and analysis was applied to *respiratory sound*. The analyses of breath sounds (vesicular, bronchovesicular, bronchial, tracheal), of various types of râles including the musical ones of bronchial asthma, and of changes in whispered and spoken voice sounds display the pertinent features of these sounds more graphically than has previously been possible. As has already been demonstrated in connection with instruction in physical diagnosis in this medical school, these displays of respiratory sound will be very useful pædagogical devices. It is true, as stated in that publication,[3] that few if any of the conclusions are original and most have been suspected or established previously on the basis of other methods of study. The analyses of the "E to A change" and of ægophony are of particular interest. The operation of the thorax (or hemithorax) as a specific acoustic filter, attenuator, and resonator in these situations is well demonstrated. To some extent definition of the physical differences of various types of râles has been possible.

The entire subject of *musical murmurs* is reviewed in a publication in August.[4] The spectral phonocardiogram does display the quality (*timbre, Klangfarbe*) of cardiovascular sound, a feature which has previously escaped either precise verbal description or graphic presentation. That quality is displayed is not surprising since all dimensions of the sound—time, frequency spectrum, and intensity—are incorporated in reasonable detail. The analysis by the instrument resembles the operation of the auditory mechanism on these sounds, and in general the pictures obtained resemble the mental image of heart sounds and murmurs.

Because of the display of timbre, this method is uniquely competent in the study of musical murmurs.[4] Details are revealed which can be related to hæmodynamic and anatomical variations at the generator. A classification of the many varieties of musical murmurs is possible.

Other virtues of the method seem to be the following:

(1) Demonstration of individual components of the heart sounds proper is facilitated—i.e., fine "splitting" is well demonstrated.[5] In conventional phonocardiography the high intensity of the components at some levels of frequency tends to result in their merging. By "spreading out" frequency, separation of components at some levels of low intensity, even if not at other or all frequencies, is accomplished. Artificial "splitting" because of peculiarities of filter design must be guarded against.

(2) Very faint sounds can be better demonstrated in the same recording with much more intense sounds. In other words the effective dynamic range of the spectral phonocardiogram is greater than that of the conventional phonocardiogram. For example, with an intense murmur of aortic stenosis followed by a faint whiff of aortic regurgitation, the regular phonocardiographic record of the systolic murmur might need to be ten feet high in its extreme excursions in order for the diastolic murmur to be demonstrated and for the two to be displayed in their true relative proportions. Filtering will not solve the problem in most such cases. Again by "spreading out" frequency the total intensity is spread out, and although in a given area the display medium (electrosensitive paper, photographic film or paper) may permit representation of only 15–30 decibels of intensity as density range, the total intensity of the sound is spread over an appreciable range of frequency. The ear is marvellously competent in the range of sounds from loudest to faintest which it is capable of handling without "overloading" from loud sounds or missing sounds of low intensity. The spectral phonocardiogram comes closer to matching this competence of the ear.

(3) Artefacts, such as non-cardiovascular body noise, ambient noise, and electrical interference, are more easily recognised and disregarded in the analysis of cardiovascular sound.

As mentioned above in connection with respiratory sound, the teaching value of the spectral phonocardiogram is considerable. One can expect a change of face of textbooks of physical diagnosis through the use of this new type of illustrative material.

I am told by friends of etymological inclination that, since fœtal phonocardiography involves study of cardiovascular sound in the fœtus, ghosts must be the object of study in spectral phonocardiography. We persist in the use of the latter term because spectrophonocardiography is such a tongue-twister. Thus far none of our patients have objected to the implications of the term.

Johns Hopkins Hospital, Baltimore, 5, Maryland, U.S.A. VICTOR A. MCKUSICK.

1. Timpe, A., Runyon, E. H. *J. Lab. clin. Med.* 1954, **44**, 202.
2. Geckeler, G. D., Likoff, W., Mason, D., Riesz, R. R., Wirth, C. H. *Amer. Heart J.* 1954, **48**, 189.
3. McKusick, V. A., Jenkins, J. T., Webb, G. N. *Amer. Rev. Tuberc.* 1955, **72**, 1.
4. McKusick, V. A., Murray, G. E., Peeler, R. G., Webb, G. N. *Bull. Johns Hopk. Hosp.* 1955, **97**, 136.
5. McKusick, V. A., Reagan, W. P., Santos, G. W., Webb, G. N. *Amer. J. Med.* (in the press).

Medicine and the Law

Dangerous Drugs

SIX summonses against a doctor for unlawful possession of a drug, contrary to regulation 9 of the Dangerous Drugs Regulations, were dismissed at a London magistrate's court recently.[1]

It was alleged that Dr. A had issued a Nigerian named Walker with prescriptions for heroin while Walker was receiving what was considered to be the maximum safe dosage from another doctor. Walker later died from heroin poisoning. There was no record of Walker ever having been a N.H.S. patient of Dr. A.

Dr. A said that he had never treated Walker by prescribing dangerous drugs other than for addiction. He might have informed the N.H.S. of the transfer, but he never received Walker's card. He never received any remuneration from the N.H.S. for his services.

The magistrate said that Dr. A was charged with being in unauthorised possession of dangerous drugs contrary to regulation 9. It was not alleged that Dr. A was himself in possession of the drug, but for this purpose the prosecution evoked the Act which provided that whoever aided, abetted, counselled, or procured the commission of an offence was liable to be treated as a principal offender. It was therefore necessary first of all to see whether an offence had been established against Walker. Prima facie a person in possession of a drug supplied on prescription by a duly qualified doctor was deemed to be a person authorised to be in possession. Such a person committed an offence only if he failed to disclose to the second doctor the fact that he was then being supplied with a drug by another doctor.

"It may well be" said the magistrate "that the patient committed an offence here. It is not for me to decide one way or another, but to my mind it would make nonsense of these regulations, which are designed to give duly qualified medical practitioners absolute discretion as to how they treat their patients and the quantities of drugs they shall prescribe, if I were to hold that these facts amounted to an infringement of these regulations by this defendant."

Obituary

WILLIAM ERNEST BOYD

M.A., M.D. Glasg., F.F. Hom., M. Brit. I.R.E.

Dr. Boyd, who died on Sept. 8, was until recently senior physician to the Glasgow Homœopathic Hospital and first consultant to the hospital under the National Health Service.

He was born in 1891 in Glasgow, and educated at Glasgow Academy and Glasgow University. After graduating M.B. in 1915 he served in the Navy during the first world war. After demobilisation he practised medicine in Glasgow, and in 1920 he joined the staff of Glasgow Homœopathic Hospital, first as radiologist and later as physician. His researches into the nature and action of homœopathic remedies ranged over electronics, biophysics, and biochemistry. In one of his last papers, published in the *British Homœopathic Journal* (1954), he described the electronic apparatus which he had designed to show physiological effects of extremely dilute solutions. The Boyd Medical Research Trust, of which he was founder and honorary director, is being carried on under the directorship of one of his sons.

Dr. Boyd did much work for boys' clubs. In 1909 he was largely responsible for founding the Glasgow Sunday meetings, which later joined with the Scottish Schoolboys' Camps to form the Scottish Schoolboys' Club. He maintained an active interest in the movement as vice-chairman throughout his life. "It may have been these contacts with youth," T. D. R. writes, "that gave him a boyish sense of humour and charm, pleasant foils to his serious and exacting scientific outlook. His life was dedicated to medicine and research in humanity's service and he brought great gifts to these high aims. All who knew him were impressed by his statesmanlike grasp of the essentials of a problem whether in medicine or administration, by his common-sense understanding of the possible, and by his rare gift of seeing further ahead than most of us."

Dr. Boyd is survived by his wife, two daughters, and two sons who are doctors.

1. *Times*, Sept. 9, 1955.

Dr. HOWARD GRAY

THE warm friendship, prodigious hospitality and great kindness of Dr. and Mrs. Gray is remembered with affection by a host of British visitors to the Mayo Clinic. R. S. M., who stayed with them only a few months ago, writes:

"It was a singular pleasure to watch 'Howdie' at work and to see how much he was respected and loved by his colleagues. He was a real saint and his example was a true inspiration. He always seemed to find time to inform and entertain his visitors on all aspects of the life and work of the Mayo Clinic, and one never ceased to be astonished by his kindness, humility, tolerance, and true Christianity. It was a wonderful experience to live in the Gray household. 'Howdie's' sound judgment and sanity in clinical matters were matched by similar qualities in other aspects of his life. He had a delightful sense of humour and a delicious fund of stories which were always wonderfully told. It was his great delight to take his British visitors aboard his motor cruiser on that lovely stretch of the Mississippi near Lake City, Minnesota, and it is all the more tragic for us to hear of his drowning there. To have known him was a rare and enriching experience."

MANY in our profession will have been very sorry to hear of the death of Miss WINIFREDE THOMPSON, who long used her lively intellect in the service of medicine. Daughter of the late John Tatham Thompson, ophthalmic surgeon to the Royal Infirmary, Cardiff, she was born in 1891, and trained as a teacher. On her father's death in 1911, she entered the household of her uncle, Prof. Silvanus P. Thompson, F.R.S., the physicist; and about this time she joined the Society of Friends, of which he was a leading member. In 1919 she was appointed assistant secretary to the newly founded Association of Scientific Workers; and later, in various posts on the Continent, often interrupted by illness, she gained the knowledge of languages which was so useful when, from 1928 to 1939, she was general secretary of the International Society of Medical Hydrology. In this capacity she will be remembered for her large share both in organising the society's many conferences abroad and, when conditions in Central Europe deteriorated, in helping those of its members who sought sanctuary here. In a different field she earned the thanks of individual medical men by her work from 1944 to 1951 in the medical department of Messrs. Butterworth, the publishers, for whom she continued to do occasional writing until a few weeks before her death on Aug. 24. A woman who did not always find it easy to reconcile exceptional kindness of heart with exceptional sharpness of mind, she had mellowed with the years.

Diary of the Week

SEPT. 25 TO OCT. 1

Tuesday, 27th

ROYAL ARMY MEDICAL COLLEGE, Millbank, S.W.1
5 P.M. Sir Philip Manson-Bahr: Wild Life in East African Game Parks.

QUEEN'S COLLEGE, DUNDEE
5 P.M. Prof. A. A. Liebow (Yale): Teaching of Medicine as Human Biology.

Appointments

ATKINS, ENID, M.B. Leeds, D.C.H.: school M.O., Plymouth.
MARTIN, PATRICIA L., M.B. Punjab, D.OBST., D.P.H.: M.O., public-health department, London County Council.
MATHIE, W. E., M.B. Glasg., D.A.: whole-time asst. anæsthetist, Stobhill General Hospital, Glasgow.
O'DEA, MARGARET M. J., L.R.C.P.I.: school M.O., Warwickshire.
RAMSAY, ROBERT, M.B. Glasg.: deputy medical superintendent, Stobhill General Hospital, Glasgow.
ROBINSON, H. D. H., M.R.C.S., D.P.H.: M.O.H., Arnold and Carlton U.D.S., Notts.
SIMPSON, W. A., M.B. Edin., D.P.H.: asst. M.O.H., West Lothian.
SWINSON, A. E. P., M.B. Belf., D.P.M.: physician-superintendent, Pewsey Mental Deficiency Hospital.
ZUTSHI, R. N., M.B. Lucknow: senior casualty officer, Royal Halifax Infirmary.

Notes and News

MEMORIAL TO JAMES PARKINSON

James Parkinson, of Hoxton, to whom international fame in the medical world came posthumously through his *Essay on the Shaking Palsy*, has been remembered in his own parish—the parish in which he lived the whole of the 69 years of his life—and in the parish church in which he was buried. Last Saturday a memorial plaque, subscribed for by the nursing staff of St. Leonard's Hospital, was unveiled in the church of St. Leonard's, Shoreditch.

At the memorial service, which attracted a large congregation, the Vicar of St. Leonard's Church, in a moving address, said that James Parkinson was a man of many parts, who, outside his own profession was interested in geology and in political and social reform. In his writings he had expressed his attitude to life as a hopeful and enthusiastic seeker after truth. Parkinson had remarkable ability in understanding abstract thought, simplifying it, and presenting it in plain terms. His political thought expressed itself in Socialism because of his sense of social justice. The thought of men in want, of children suffering, of slums and starvation, drove him to fierce anger and to positive action. We should give thanks to God for such a character, feel strengthened and inspired by his example, and have faith in the future of man.

The commemorative plaque was unveiled by Dr. A. D. Morris, formerly medical superintendent of St. Leonard's Hospital, whose paper on Parkinson we published on April 9 of this year. The commemorative plaque, he said, was a simple memorial to replace James Parkinson's tombstone, which had been swept away. Parkinson needed no ostentatious monument, since his monument was already made—made of materials which neither man, nor time, nor tempests could again destroy. Dr. Morris hoped that in the years to come St. Leonard's Church would become a place of pilgrimage for all who learned to revere and respect the memory of James Parkinson.

The lessons were read by Miss Bell, matron of St. Leonard's Hospital, and Mr. Thomas Noel, the hospital secretary. Among those present were two descendants of James Parkinson, Dr. Robert Tringham, and Mr. Herman Saunders, the Mayor and Mayoress of Shoreditch, Sir Allen Daley, Sir Zachary Cope, Sir John Nicholson, Dr. Donald Hunter, Dr. Macdonald Critchley, Dr. George Graham, Mr. Dickson Wright, and Mr. V. A. Eyles.

CANCER IN BIRMINGHAM

THE second volume of the annual cancer reports of the United Birmingham Hospitals deals with the larynx, bronchus, penis, urethra, and scrotum.[1] Cancer reports can be dull reading. When much detailed and tedious work has been done collecting the figures there is a great temptation to serve them all up in one immense indigestible dish. The editors, Prof. Melville Arnott and Mr. B. N. Brooke, have resisted this temptation, and their report, like the earlier one, is clear and interesting. But the very thoroughness of the work might raise a question. Under the cancer registration scheme of the General Register Office the aim is, in time, to record the basic facts of the illness, treatment, and death of all patients with cancer in England and Wales. To what extent do regional schemes duplicate the national one?

An efficiently organised regional scheme, such as that in the Birmingham area, can indeed lighten the work of the individual hospitals in their coöperation in the national scheme. But if the regional organisation called for no more information than is needed by the General Register Office it would become simply a collecting and clearing house; and its reports would be small and relatively unimportant chapters of the national book. If this were to be the only function of the regional cancer organisations it is doubtful whether the expense and hard work they entail could be justified. Statistics of the experience of cancer patients in a particular region might as easily be obtained—though certainly more slowly—through the national organisation; and regional differences could be studied much better from uniformly compiled records than from separate and inevitably different regional reports.

The cancer report of the United Birmingham Hospitals is, according to the preface to the first volume,[2] published for the benefit of the staff of the coöperating hospitals. The reports, however, are clearly of more than domestic importance and provide widely useful information unobtainable under the national scheme. National statistics can, for instance, provide yearly survival-rates of patients with lung cancer treated by radiotherapy; but the statistical organisation is too remote to take account of the changing policies that determine which patients should be treated; and the rates have little practical value. The regional schemes, on the other hand, can attempt, though still imperfectly, to allow for such immeasurable factors; for the local conditions, personalities, and fashions are well known. They can for the same reason deal with such subjective assessments as the symptomatic results after radiotherapy; and this is included in the Birmingham reports for lung cancer.

1. Annual Cancer Report. United Birmingham Hospitals; vol. II, 1954.
2. Annual Cancer Report. United Birmingham Hospitals; vol. I, 1953.

FOOD CONSUMPTION IN 1953

IN 1953 the nutritional level of the national diet was well maintained (according to the annual report of the National Food Survey Committee [1]) and the energy-value of the diet continued to increase over former years. The deterioration in the balance-of-payments position, which led to a reduction in the food-supplies in 1952, was arrested later in that year, and was reversed in 1953; this was reflected in a 13% increase in the volume of imports of food, drink, and tobacco. Part of this increase was used to build up stocks.

The Ministry of Labour's statistics show that the index of average weekly earnings, which had been keeping closely in step with the index of retail prices for the three years previously, went ahead in 1953. Food prices, however, had risen more than prices generally, and this, together with the greater availability and variety of supplies, caused domestic consumers to devote a large part of their increased purchasing-power to food. Domestic expenditure on food was 10%, or nearly 2*s.* 1*d.* per head per week, higher than in 1952.

The controls and rationing of some commodities were relaxed or abolished, and the year saw an increase, compared with 1952, in the consumption of meat, bacon, dairy products, sugar, and fresh fruit, and a large increase in the consumption of tea. As meat and dairy products became more plentiful, there was less demand for potatoes, cereal products, and fish. From August, 1953, white bread was put on sale again, but the demand for it was very limited—no doubt largely because of its relatively high price (6·9*d.* per lb. compared with 4·6*d.* per lb. for the subsidised National loaf)—and some bakers soon discontinued baking white bread.

The report says that most of the changes between 1952 and 1953 reflected a tendency for the national diet to revert to the pre-war position. But it adds that "some of the remaining differences between the pre-war and post-war diet may be expected to persist, particularly the higher consumption of milk, the lower consumption of fish, and the partial replacement of butter by margarine."

THE SUICIDAL PATIENT

THE first time a student mental nurse is given the responsibility of safeguarding a suicidal patient she is bound to feel some self-doubt and alarm. This is the central theme of a new Ministry of Health film, *Continuous Observation*, intended mainly for the training of mental nurses and nursing assistants. The young nurse, textbook instructions and stories of successful attempts at suicide running through her head, is handicapped by her own anxiety in dealing with Mrs. Reed, her depressed patient. She fumbles miserably in her attempts to interest her and get her to talk. Mrs. Reed is distressed at the thought that her "children" will not be able to visit her, and the nurse does not think quickly enough of the crucial question "How old are your children?" The sister, however (splendidly played by Miss Rosalie Crutchley) asks this question at once, and is able to assure Mrs. Reed that her eldest boy, already out at work, will certainly be able to visit her. In a small case-conference with her nurses the sister shows that the textbook rules are no more than a working basis; the nurse, by using her sympathy and imagination, can gain insight into the patient's troubles, reassure her, and distract her from painful thoughts. Later in the film the young nurse is seen to have profited by what she has learnt, and to have gained in confidence.

The film is well written, well constructed, and well photographed. Were it not for the sequence showing the ugly types of suicide of which the young nurse has heard, it might serve for a recruiting, as well as a teaching, film. Those unfamiliar with mental hospitals may be struck by the youth of the

1. Ministry of Food. Domestic Food Consumption and Expenditure 1953. Annual report of the National Food Survey Committee. H.M. Stationery Office. 1955. Pp. 104. 4*s.*

student nurses, between whom and the mature sister there seems to be no intermediate grade: but that is a true picture in a nursing field where staff nurses are few and student wastage high. Mental nursing—that "subtle and interesting job," as the Ministry put it—is being learnt thoroughly and practised only by the few.

Basic Films Ltd., have made the film for the Ministry. It has been written and directed by Margaret Thomson, and runs for 25 minutes. It may be hired at reasonable charges from the Central Film Library, Central Office of Information, Government Building, Bromyard Avenue, Acton, London, W.3.

RADIOLOGY EXHIBITION

A SCIENTIFIC exhibition was staged in association with the fourth Symposium Neuroradiologicum, held in London last week. The presentation of large numbers of radiographs has always been difficult, but this difficulty has apparently been overcome by the design of a new illuminator unit.[1] This is double-sided and is designed to display eight 14 in. × 17 in. panels on each face; the presentation is more uniform than with other methods; and exhibitors coöperated well in preparing their material to a standard format, with all letterpress as transparencies. Viewing is easy, and the reduction in ambient light reveals the radiographs at full brilliance.

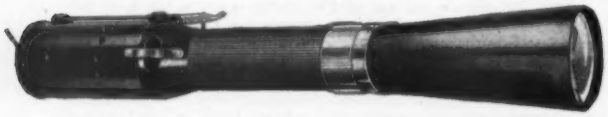
A collection of some 300 panels represented current work in this country and in America, Canada, Czechoslovakia, France, Holland, Italy, Norway, and Sweden. The devices shown included a stereotaxic machine from the Royal Aircraft Establishment, Farnborough, and an instrument for applying ultrasonic "echo-sounding" to the location of intracranial lesions. Perhaps because of their topicality a set of radiographs of the Swanscombe skull attracted much attention, and many visitors commented on a somewhat complementary exhibit on the infant skull. Several applications of stereoscopy were shown—notably the results of an investigation of the cerebral blood-supply, from Chicago. Two exhibits from Manchester were noticed for the clarity of their presentation, and stood out from the monochrome surrounding by the discrete application of colour.

The display units are going to various medical schools and hospitals; and the British Institute of Radiology is maintaining a register of their location, so that they may be available for borrowing by the organisers of future conferences.

ARROW PROJECTION TORCH

Mr. P. M. G. RUSSELL, F.R.C.O.G., writes: Those who have used the arrow projection torch at the Royal Society of Medicine or while lecturing elsewhere may be glad to know that an instrument of this type is now available in this country.

Messrs. Rayner & Keeler have produced a torch of suitable dimensions which throws a bright arrow on the screen for



demonstrating the details of any photograph, illumination being by a 6-V 30-W bulb via a transformer. The instrument, having regard to its power, is handy, and it remains cool in use. To minimise the risk of breakage, there should be a shelf or ledge, near the screen, on which the lecturer can lay the instrument when it is not needed, while the transformer (to which the torch is attached by a light electric cable) can be fixed in some suitable spot such as just below the shelf. The illustration gives some impression of the instrument, which is beautifully made and finished.

The instrument should be useful in hospitals, medical schools, and colleges generally.

Historical Exhibition of Pharmacy

An exhibition illustrating the Story of Pharmacy has been set up by the Wellcome Historical Medical Museum at the Wellcome Building, Euston Road, London, N.W.1. The exhibition was opened by Sir Hugh Linstead, M.P., on Monday, Sept. 19, after he had given his presidential address to the assembly of the International Pharmaceutical Federation. The exhibition will remain open to the public for several months.

1. Ollerenshaw, R. *Brit. J. Radiol.* 1955, **28**, 514.

University of Birmingham

Prof. Thomas Bodkin will give the address at the opening of the new session on Monday, Oct. 3, at 3 P.M., at Queen Elizabeth Hospital.

West End Hospital for Neurology and Neurosurgery

A course of clinical demonstrations in neurology is to be held at the hospital on Tuesdays at 5.30 P.M. from Oct. 11 to Dec. 13. Further particulars may be had from the secretary of the postgraduate school, 91, Dean Street, London, W.1.

Royal Institute of Public Health and Hygiene

The Bengué lecture will be given by Prof. G. P. Crowden at the institute, 28, Portland Place, London, W.1, on Tuesday, Oct. 18, at 5 P.M. His subject will be environmental factors affecting comfort, health, and working capacity.

Physiological Effects of Hot Climates

The medical section of the Royal Statistical Society will discuss this subject on Tuesday, Sept. 27, at 6.15 P.M. at the Westminster Medical School, Horseferry Road, London, S.W.1. The speaker will be Mr. J. O. Irwin, D.SC. Further particulars may be had from the hon. secretary, Mr. M. P. Curwen, St. Bartholomew's Hospital, London, E.C.1.

Middlesex Hospital, London

The annual dinner of past and present students of the school will take place at the Savoy Hotel, London, W.C.2, on Friday, Sept. 30, at 7.30 P.M. Sir Harold Graham-Hodgson will be in the chair. A refresher course for old Middlesex men will be held at the hospital from Sept. 30 to Oct. 2.

Ophthalmological Society of the United Kingdom

The annual congress of this society will be held next year in London from April 26 to 28. The programme will include a discussion on the early diagnosis of glaucoma and a short symposium on herpetic infections of the outer eye. Further particulars may be had from the hon. secretaries of the society, 45, Lincoln's Inn Fields, London, W.C.2.

Association of Clinical Pathologists

Prof. S. P. Bedson, F.R.S., will deliver a lecture to this association in honour of the late Sir Philip Panton at the Royal College of Surgeons, Lincoln's Inn Fields, London, W.C.2, at 2 P.M., on Thursday, Sept. 29. He is to speak on Viral Multiplication and the Chemotherapy of Viral Infections. All who are interested are invited to attend.

Aids for the Disabled

The British Red Cross Society is holding an exhibition of these aids, showing the needs of a disabled person from getting up in the morning, through various occupations during the day, to recreation in the evening, at the Royal Institute of Public Health and Hygiene, 28, Portland Place, London, W.1, on Wednesday and Thursday, Oct. 12 and 13, from 2.30 P.M. to 7.30 P.M.

Ilford Medical Society

This society is celebrating its golden jubilee during 1955–56 under the presidency of Dr. J. Arthur Moody. The first meeting of the new session will be held, jointly with the Northern Home Counties Faculty, of the College of General Practitioners, on Tuesday, Sept. 27, at 8.45 P.M., at the King George Hospital, Ilford, when Dr. G. O. Baker, Dr. Stephen Taylor, and Dr. J. Stanley Thomas will speak on the Future of General Practice.

Institute of Diseases of the Chest, London

Clinical demonstrations will be given by Dr. J. L. Livingstone and Sir Clement Price Thomas at the institute (in the grounds of the Brompton Hospital, Fulham Road, S.W.3) on Fridays from Sept. 30 to Dec. 16. Open lectures by Dr. F. H. Young, Mr. T. Holmes Sellors, Dr. J. C. Hoyle, Mr. O. S. Tubbs, Mr. D. Barlow, Mr. J. R. Belcher, and Sir Russell Brock will be given on Wednesdays, from Oct. 5 to Dec. 7. All the meetings are open to doctors without fee and will be held at 5 P.M.

Births, Marriages, and Deaths

DEATHS

LEIGHTON.—On Sept. 16 at St. Ives, Dorridge, Warwickshire, Simon Reuben Leighton, M.D., beloved husband of Mae.

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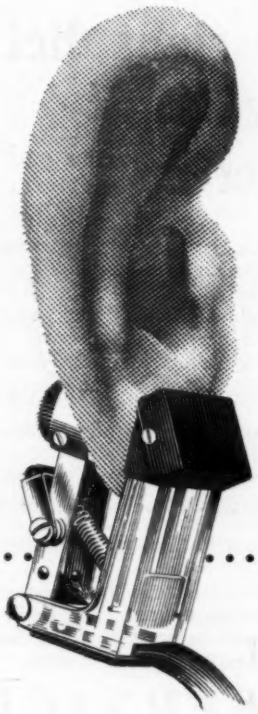

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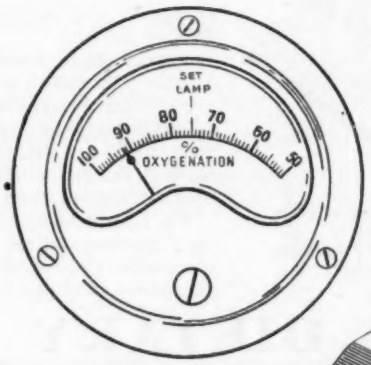

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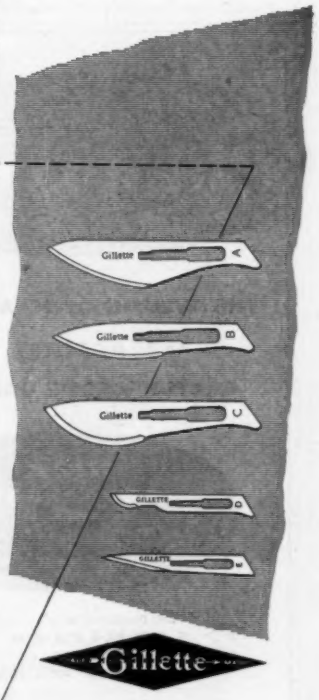

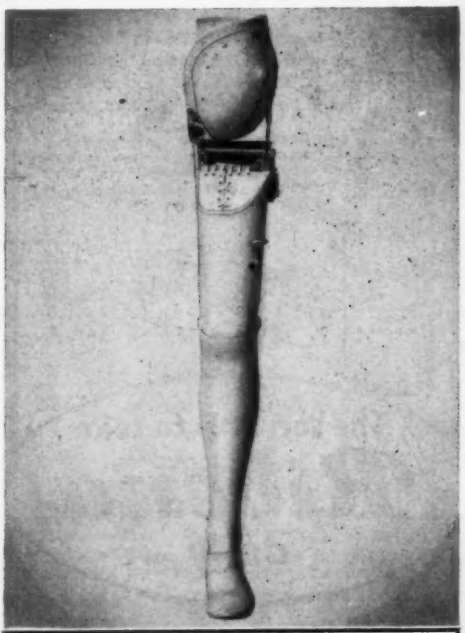

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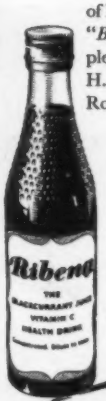

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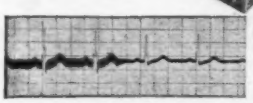

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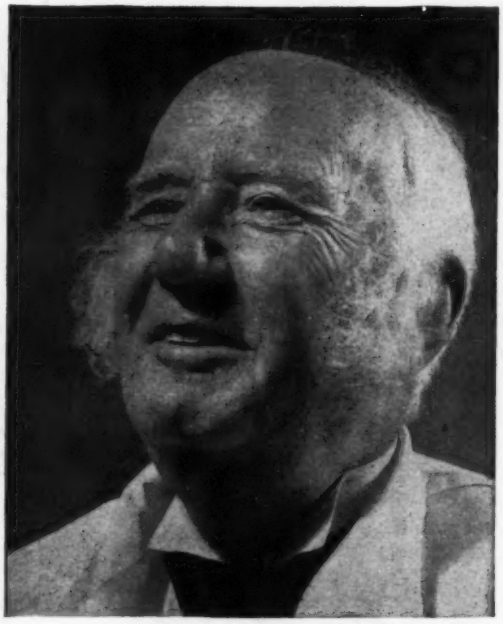

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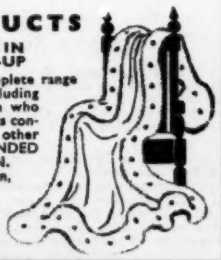

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Vacancies

ACADEMIC AND EDUCATIONAL SECTION	*Page* 48
ANÆSTHETICS	
Royal National T.N. & E. Reg. ..	50
South London Hosp. for Women & Child., S.W.4. Reg.	50
St. Peter's, St. Paul's & St. Philip's, W.C. P.-t. Cons.	49
Birmingham R.H.B. Regs.	51
Colchester H.M.C. Sr. H.O... ..	52
Dudley, Stourbridge & Dist. Sr. H.O.'s	53
East Anglian R.H.B. Reg.	53
Harold Wood, Essex. Sr. H.O. ..	53
Kettering & District H.M.C. Sr. H.O.	54
Leeds United Hosps. & R.H.B. P.-t. Cons.	49
Luton & Dunstable. Reg.	55
Manchester R.H.B. Cons.	49
Manchester R.H.B. Sr. Reg... ..	55
Plymouth, South Devon & East Cornwall. Sr. H.O. & Locum Sr. H.O.	56
Sheffield United Hosps. Reg. ..	57
Slough. Upton. Locum Reg... ..	57
South West Met. R.H.B. Locum Cons. or Sr. H.M.O.	49
Warrington Gen. Sr. H.O.	58
Welsh R.H.B. Reg.	58
New Zealand. Otago Hosp. Board. Assistant Director & Lecturer ..	49
BACTERIOLOGY	
Scotland. Western R.H.B. Reg. ..	57
CASUALTY	
Connaught, E.17. Sr. H.O.	50
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Lambeth, S.E.11. Sr. H.O. or H.O.	50
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St. Charles', W.10. Sr. H.O.	50
Wanstead, E.11. Sr. H.O.	50
Bolton & Dist. H.M.C. Sr. H.O. ..	52
Brighton. Royal Sussex County. H.O.	52
Canterbury. Kent & Canterbury. Sr. H.O.	52
Chesterfield Royal. Pre-reg. H.O. or Sr. H.O.	53
Colchester H.M.C. Sr. H.O... ..	52
Dudley, Stourbridge & Dist. Sr. H.O.'s	53
Epsom Dist. Sr. H.O...	53
Grimsby Gen. Sr. H.O.	53
Hertford County. Sr. H.O.	54
Isleworth. West Middx. Sr. H.O. ..	54
Leeds Public Dispensary & Hosp. Sr. H.O.	54
Maidenhead. H.O.	55
Maidstone. West Kent Gen. Sr. H.O.	55
Newport, Mon. Royal Gwent. Sr. H.O.'s	56
Northampton Gen. Sr. H.O. & H.O.	56
Oxford United Hosps. Reg.	56
Rhyl. Royal Alexandra. Sr. H.O. ..	57

Scarborough. Jr. H.M.O. 57
Slough. Upton. H.O. & Locum H.O. 57
Southport Gen. Jr. H.M.O. 58

CHEST AND TUBERCULOSIS

Brompton, S.W.3. H.O.'s 49
Cardiff. Cefn Mably. Jr. H.M.O. .. 52
Dagenham, Essex. Jr. H.M.O. .. 53
Driffield. Northfield San. Sr. H.O. .. 53
Henley-on-Thames. Peppard Chest. Jr. H.M.O. 53
Hounslow Chest Clinic. Reg. .. 54
Ilford & Barking Group H.M.C. Jr. H.M.O. 54
Leicester. Markfield San. Reg. .. 54
Manchester R.H.B. Sr. H.M.O. .. 49
Skipton. Grassington. Sr. H.O. or Jr. H.M.O. 57
Stoke-on-Trent. Stanfield San. Jr. H.M.O. 58
Ventnor, I. W. Royal National Hosp. for Diseases of the Chest. Jr. H.M.O. or Sr. H.O. 58
Watford Chest Clinic. Reg. 58
Cork Sanatoria Board. Temp. Jr. M.O. & Temp. H. Phys. 59

DERMATOLOGY

Cambridge. Addenbrooke's. Reg. .. 52
North West Met. R.H.B. Reg. .. 56
Oxford R.H.B. P.-t. Cons. 49

EAR, NOSE, AND THROAT

South East Met. R.H.B. P.-t. Cons... 48
Birmingham & Midland Ear & Throat. H.O. 51
Birmingham R.H.B. Reg. 51
Blackpool. Victoria. Sr. H.O. .. 52
Brighton & Lewes H.M.C. Locum Reg. 51
Doncaster Royal Infy. Sr. H.O. .. 53
Oxford United Hosps. Reg. 56
Perthshire. Bridge of Earn. Sr. H.O. 56
Scotland. Western R.H.B. Reg. .. 57
Sheffield United Hosps. Sr. Reg. .. 57
Southampton. Royal South Hants. & Southampton Gen. Sr. H.O. .. 57
Taunton & Somerset. Pre-reg. H.O... 58

GERIATRICS

Birmingham. Summerfield. Jr. H.M.O. 51
Oxford R.H.B. Reg... 56
Pontefract & Castleford H.M.C. Jr. H.M.O. 56
Rochford. Gen. Locum Reg. .. 57

MEDICINE

Highlands, N.21. H.O. 49
Queen Mary's Hosp. for the East End. H.O. 50
Aylesbury. Stoke Mandeville. Sr. H.O. & H.O... 51
Bath. Royal United Hosp. H.O. .. 51
Birmingham R.H.B. Regs. 51
Birmingham United Hosps. Sr. Reg. 51
Bishop's Stortford & Dist. Sr. H.O. .. 51
Braintree. Black Notley. H.O. .. 52
Brighton. Royal Sussex County. H.O. 52
Colwyn Bay & West Denbighshire. Jr. H.M.O. 53
Huntingdon County. H.O. 54
Ilford. King George. Pre-reg. H.O... 54
Ipswich & East Suffolk. Sr. H.O. .. 54
Ipswich. St. Helen's. H.O. 54
Leeds R.H.B. Regs. 54
Liverpool United Hosps. Reg. .. 54
Luton. St. Mary's. Sr. H.O... .. 55
Maidenhead. H.O. 55
Manchester R.H.B. Reg. 55
Salford Royal. Sr. H.O. 57
Sheffield United Hosps. Sr. Regs. .. 57
Southampton. Royal South Hants. H.O.'s 58
Southport. Promenade. Sr. H.O. .. 58
Stoke-on-Trent. City Gen. H.O. .. 58
Swansea. Mount Pleasant. Jr. H.M.O. 58
Weymouth & Dist. Pre-reg. H.O. .. 58
Worksop. Kilton. Reg. 59

NEUROLOGY

Birmingham R.H.B. Reg. 51

NEUROSURGERY

Smethwick. Midland Centre for Neurosurgery. Sr. H.O. 57

OBSTETRICS AND GYNÆCOLOGY

British Hosp. for Mothers & Babies, S.E.18. Sr. H.O. & H.O. 49
Guy's Hosp. & S. East Met. R.H.B. Sr. Reg. 50
Queen Charlotte's & Chelsea Hosps. Sr. H.O.'s 50
Bangor. St. David's. Sr. H.O. .. 51
Birmingham United Hosps. H.O. .. 51
Bishop's Stortford. Haymeads. H.O. 51
Blackpool. Victoria. H.O. 52
Chichester Group H.M.C. Reg. .. 52
Hastings. Buchanan. H.O. 53
Huddersfield Royal Infy. H.O. .. 53
Hull. Kingston Gen. Pre-reg. H.O... 54
Macclesfield. Pre-reg. H.O. 55
Manchester. Crumpsall. Reg. .. 55
Manchester United Hosps. H.O. .. 55
Manchester United Hosps. Sr. H.O... 55
Newcastle Gen. H.O... 56
Reading. Royal Berkshire. H.O. .. 57
Salisbury Gen. H.O. 57
Sheffield United Hosps. Locum Sr. Reg. 57
St. Albans City. Jr. H.M.O. 58
Wolverhampton Group. Pre-reg. H.O. & Locum Reg. or Sr. Reg... .. 59

OPHTHALMOLOGY

North West Met. R.H.B. P.-t. Sr. H.M.O.'s 49
Royal Free Hosp. Group. P.-t. Sr. Reg. 50
South West Met. R.H.B. P.-t. Cons. 48
Brighton, Sussex Eye, H.O... .. 51
Manchester R.H.B. P.-t. Cons. .. 49
Manchester United Hosps. Sr. H.O... 55
Scotland. Western R.H.B. Reg. .. 57
Stoke-on-Trent. North Staffs Royal Infy. Sr. H.O. 58
Wolverhampton Group. Sr. H.O. .. 59

ORTHOPÆDICS

Queen Mary's (Roehampton), S.W.15. Reg. 50
South East Met. R.H.B. Reg. .. 50
Whipps Cross, E.11. H.O. 50
Ascot. Heatherwood Orthopædic. Sr. H.O. 51
Bath & Wessex Orthopædic. H.O. .. 51
Birmingham R.H.B. Regs. 51
Blackburn. Royal Infy. Jr. H.M.O. 52
Chepstow. St. Lawrence. Sr. H.O. .. 52
Doncaster Royal Infy. Sr. H.O. .. 53
Durham. County. Sr. H.O. & H.O... 53
Ipswich & East Suffolk. H.O. .. 54
Ipswich & East Suffolk. Sr. H.O. .. 54
Leeds United Hosps. Sr. H.O. .. 54
Lewes. Chailey Heritage (Craft School & Hosp.) Sr. H.O. 54
Manchester United Hosps. Sr. Reg... 55
Margate. Royal Sea Bathing. Sr. H.O. 55
Newcastle R.H.B. Sr. Reg. 56
Nottingham Gen. Sr. H.O. 56
Oswestry. Robert Jones & Agnes Hunt Orthopædic. Sr. H.O. .. 56
Perthshire. Bridge of Earn. H.O. or Sr. H.O. 56
Plymouth. Mount Gold Orthopædic. Sr. H.O. 56
Portsmouth Group H.M.C. Sr. H.O. & H.O. 56
Salford Royal. Sr. H.O. 57
Scotland. North Eastern R.H.B. Cons. 49
Scotland. Western R.H.B. Sr. Reg... 57
Scunthorpe & Dist. War Mem. Reg. 57
Shrewsbury. Royal Salop Infy. Sr. H.O. 57
Southampton. Royal South Hants. Reg. 58
South West Met. R.H.B. Sr. H.M.O. 49
Swansea. Sr. H.O. 58
Wigan. Royal Albert Edward Infy. Sr. H.O. 58
Winchester. Royal Hants. Sr. H.O... 58
Wolverhampton Group. Sr. H.O. or H.O. 59
New Zealand. Otago Hosp. Board. Sr. Reg. 59

PÆDIATRICS

Hammersmith & Institutes of Obstetrics and Child Health. Reg. .. 49
Prince of Wales's Gen., N.15. H.O... 50
St. Ann's Gen., N.15. Sr. H.O. .. 51
Birmingham. Selly Oak. Sr. H.O. .. 51
Leeds United Hosps. Reg. 54
Manchester. Duchess of York Hosp. for Babies. H.O. 55
Manchester United Hosps. Reg. .. 55
Northampton Gen. H.O. 56
Nottingham Child's. Pre-reg. H.O... 56
Oxford R.H.B. Reg... 56
Southampton Childs. H.O. 57
Wigan. Royal Albert Edward Infy. Sr. H.O. 58

PATHOLOGY

St. Peter's, St. Paul's & St. Philip's, W.C.2. Sr. Reg. 51
Bury & Rossendale H.M.C. Sr. H.O. 52
Northampton Gen. Sr. H.O... .. 56
Rochdale & Dist. H.M.C. Sr. H.O... 57
Scotland. Western R.H.B. Regs. .. 57
Stoke-on-Trent H.M.C. Jr. H.M.O. or Sr. H.O. 58

PLASTIC SURGERY

Chepstow. Plastic Surgery, Jaw Injuries & Burns Centre. Sr. H.O. 52

PSYCHIATRY

St. Mary's, W.2. P.-t. Reg. 50
Birmingham R.H.B. Reg. 51
Blackburn. Calderstones. Locum Jr. H.M.O. 52
Chesterfield H.M.C. Jr. H.M.O. .. 53
Dundee. Westgreen Mental. H.O. .. 53
East Anglian R.H.B. Sr. Regs. .. 53
Glasgow. Western R.H.B. Sr. H.M.O. 49
Manchester R.H.B. Sr. H.M.O. .. 49
North West Met. R.H.B. P.-t. Sr. H.M.O. 49
Norwich. St. Andrews. Sr. H.O. .. 56
Scotland. Western R.H.B. Reg. .. 57

RADIOLOGY

Cardiff United Hosps. Sr. Reg. .. 52
Manchester R.H.B. Cons. 49
Scotland. Northern R.H.B. Sr. Reg. 57

RADIOTHERAPY

Royal Marsden, S.W.3. Reg... .. 50
Manchester. Christie Hosp. & Holt Radium Inst. Reg. 55

SURGERY

Bethnal Green, E.2. H.O. 49
Manor House, N.W.11. Res. Surg. Officer 50
Miller Gen., S.E.10. Locum Reg. .. 50
Royal Marsden, S.W.3. H.O. .. 50
St. Leonard's, N.1. H.O. 50
Beverley. Westwood. H.O. 51
Birmingham R.H.B. Reg. 51
Blackburn & Dist. H.M.C. H.O.'s .. 52
Bolton & Dist. H.M.C. H.O... .. 52
Braintree. Black Notley. H.O. .. 52
Brighton. Royal Sussex County. H.O.'s 52
Canterbury. Kent & Canterbury. H.O. 52
Cardiff. Royal Hamadryad Gen. & Seamen's. Sr. H.O... 52
Chelmsford & Essex. Pre-reg. H.O... 52
Chertsey. St. Peter's. Sr. H.O. or Pre-reg. H.O. 52
Croydon. Mayday. Pre-reg. H.O. .. 52
Douglas. Noble's I.O.M. Sr. H.O. & H.O. 53
Dudley, Stourbridge & Dist. Sr. H.O. 53
Haverfordwest. Pembroke County War Mem. Sr. H.O... 53
Hitchin. Lister. H.O... 54
Ipswich & East Suffolk. Pre-reg. H.O. 54
Kidderminster & Dist. Gen. Pre-reg. H.O. & Locum H.O. 54
Manchester R.H.B. P.-t. Cons. .. 49
Manchester. Royal Manchester Child's. Reg. 55
Manchester. Withington. Sr. H.O... 55
Manchester. Wythenshawe. Sr. H.O. 55
Northampton Gen. H.O. 56
North East Met. R.H.B. Reg. .. 56
Plymouth, South Devon & East Cornwall. Pre-reg. H.O. 56
Redhill. East Surrey. H.O. 57
Sheffield United Hosps. Sr. Reg. .. 57
Southampton. Royal South Hants. H.O. 58
Stoke-on-Trent. City Gen. H.O.'s .. 58
Stoke-on-Trent. North Staffs Royal Infy. H.O. 58
Warrington Infy. H.O. 58
Welsh R.H.B. Reg. 58
West Bromwich & Dist. Gen. Pre-reg. H.O. 58
Wolverhampton Group. Pre-reg. H.O. 59
Worthing. Locum Reg. 59

THORACIC SURGERY

Edinburgh Northern Group. H.O.'s 53
Ilkley. Middleton. Sr. H.O. 54
Leicester Isolation Hosp. & Chest Unit. Sr. H.O. 55
Manchester. West Manchester H.M.C. Sr. H.O. 55
Oxford United Hosps. Reg... .. 56
Wakefield. Pinderfields Gen. Jr. H.M.O. 58

UROLOGY

St. Peter's, St. Paul's & St. Philip's, W.C.2. Sr. Reg. 50

PUBLIC APPOINTMENTS 59

GENERAL PRACTICE 60

MISCELLANEOUS 60

The Terms and Conditions of Service of Hospital Medical and Dental Staff apply to all N.H.S hospital posts we advertise, unless otherwise stated. Canvassing disqualifies but candidates may normally visit the hospital by appointment.

Academic and Educational

UNIVERSITY OF LONDON
INSTITUTE OF ORTHOPÆDICS

COURSE IN DISORDERS OF JOINTS
17TH–22ND OCTOBER, 1955

Monday, 17th October—Town Section	
Manipulation of Joints	Mr. H. J. BURROWS
Ankylosing Spondylitis	Prof. B. W. WINDEYER
Intervertebral disc lesions	Mr. J. I. P. JAMES
The pathology of joint diseases	Dr. H. A. SISSONS
Tuesday, 18th October—Town Section	
Internal derangement of knee	Mr. R. Y. PATON
Rheumatoid Arthritis	Dr. R. NASSIM
Hallux Valgus and Rigidus	Mr. G. L. W. BONNEY
Fractures into Joints	Mr. P. H. NEWMAN
Wednesday, 19th October—Country Section	
Bacteriology of Joint disease	Dr. A. G. TOWERS
C.D.H.	Mr. D. TREVOR
Loose bodies in joints	Mr. A. W. L. KESSEL
Chemistry of synovial fluid	Dr. P. G. WALKER
Thursday, 20th October—Country Section	
General Management of joint tuberculosis	Dr. F. H. STEVENSON
Ætiology and Treatment of contractures	Mr. R. L. G. DAWSON
Arthrodesis and Arthroplasty	Mr. K. I. NISSEN
Septic Arthritis	Mr. K. I. NISSEN
Friday, 21st October—Country Section	
Tuberculosis of hip and knee	Mr. J. A. CHOLMELEY
Tuberculosis of spine	Mr. H. J. SEDDON
Saturday, 22nd October—Town Section	
Spondylolisthesis	Mr. P. H. NEWMAN
Dislocations	Mr. H. J. BURROWS

The fee for this course (including lunch and tea) is 7 guineas.
Early application should be made to The Dean, at 234, Great Portland-street, London, W.1.

COURSE IN ORTHOPÆDIC SURGERY
HARLOW WOOD ORTHOPÆDIC HOSPITAL, near MANSFIELD, NOTTS

7TH–11TH NOVEMBER, 1955

7th Nov...	Introduction	Mr. S. A. S. MALKIN
	Clinical Teaching Round—Mansfield General Hospital	Mr. E. A. NICOLL
8th Nov...	The Rôle of Plastic Surgery in Orthopædics, with demonstration	Mr. D. WYNN-WILLIAMS
	The Cervical Spine	Mr. A. N. BIRKETT
	Hand Surgery	Mr. R. G. PULVERTAFT
9th Nov...	The Management of Rheumatoid Arthritis by the Physician	Dr. J. M. MACFIE
	The Management of Rheumatoid Arthritis by the Surgeon	Mr. L. MORRIS
	Treatment of Osteoarthritis of the Hip	Mr. J. P. CAMPBELL
10th Nov...	The Rehabilitation of the Orthopædic Patient	Mr. S. A. S. MALKIN
	The Management of Orthopædic Tuberculosis	Mr. J. P. JACKSON
11th Nov...	The Use of Contrast Media in Orthopædic Radiology	Dr. E. J. S. TOWNSEND
	Poliomyelitis	Mr. W. J. SHARRARD
	Treatment of Paraplegia due to Fracture Dislocation of the Dorso-lumbar Spine	Mr. F. W. HOLDSWORTH
	Professional Negligence	Mr. L. J. THOMAS, Legal Adviser to Sheffield Regional Board

No fee for the Course.
Applications to be sent to Secretary, Harlow Wood Orthopædic Hospital. Limited accommodation available, if required, at associated Hospital.

TANCRED'S STUDENTSHIPS
DIVINITY : MEDICINE : LAW
£100 p.a. each. For Men only

The Governors propose to elect 1 student in Divinity at Christ's College, Cambridge, on the result of the Scholarship Examinations to be conducted in DECEMBER, 1955, by the Queens', Christ's, St. John's, Emmanuel and Sidney Sussex Group of Colleges in the University of Cambridge.
Candidates must have been born in England, Scotland or Wales, and be members of the Church of England and unmarried; they must also be within the ages of 17 and 22 years.
Candidates should in addition to making the necessary arrangements with the Managers of the above Scholarship examinations send in a Petition to the Clerk to the Tancred's Foundation by 1st November, 1955.
Further announcements relating to the Physic and Law Studentships awarded by this Foundation will appear in February and April, 1956.
Apply for further particulars and form of Petition, stating kind of Studentship and mentioning this paper to the Clerk, R. M. C. HOWARD, Esq., D.S.O., 28, Lincoln's Inn-fields, London, W.C.2.

SOCIETY OF APOTHECARIES OF LONDON
DIPLOMA IN INDUSTRIAL HEALTH

The next Examination will begin on MONDAY, 5TH DECEMBER, 1955. The following Examination will be held in July, 1956.
For Regulations apply Registrar, Apothecaries' Hall, Black Friars-lane, London, E.C.4.

UNIVERSITY OF GLASGOW. Applications are invited for a LECTURESHIP IN PATHOLOGY at the Royal Infirmary. Salary according to placement on University scale for clinical teachers. The final maximum is £1750 p.a. F.S.S.U. and family allowance benefits.
Applications (12 copies) should be lodged, not later than 17th October, 1955, with the undersigned, from whom further particulars may be obtained.
ROBT. T. HUTCHESON, Secretary of University Court.

UNIVERSITY OF GLASGOW. Applications are invited for a SENIOR LECTURESHIP IN PATHOLOGY at the Royal Infirmary. The Senior Lecturer to be appointed will have an honorary contract with the Regional Board and will be graded as Consultant. The salary will be on the University scale for clinical teachers, the maximum of which is £2400. F.S.S.U. and family allowance benefits.
Applications (12 copies) should be lodged, not later than 17th October, 1955, with the undersigned, from whom further particulars may be obtained.
ROBT. T. HUTCHESON, Secretary of University Court.

UNIVERSITY OF ABERDEEN. Applications are invited for the post of LECTURER IN PHYSIOLOGY. Training and experience in the bio-physical aspects of the subject required. Salary scale (*b*) £950–£1350, or scale (*a*) £650–£950, with placing according to qualifications. Superannuation (F.S.S.U.) and children's allowance. Part of removal expenses refunded.
Conditions of appointment and forms of application should be obtained from the undersigned, with whom applications (8 copies), giving the names of 3 referees, should be lodged not later than 15th October, 1955. Applicants outside the British Isles may submit 1 copy only.
The University, Aberdeen. W. S. ANGUS, Secretary.

UNIVERSITY OF CAPE TOWN/PROVINCIAL ADMINISTRATION OF THE CAPE OF GOOD HOPE. Joint Medical Staff. Applications are invited for the CHAIR OF RADIOLOGY (diagnostic) in the University of Cape Town. The appointment will be made under the terms of the Joint Staff Agreement between the University of Cape Town and the Provincial Administration of the Cape of Good Hope. It is a full-time appointment and the occupant of the Chair is not permitted to undertake remunerative private work. The salary is £2628 p.a., plus a temporary cost-of-living allowance for a married man (at present £234 p.a.). The Professor will be Head of the University Department of Radiology, and must be specially qualified in diagnostic radiology.
Applications should state age, qualifications, experience, publications and research interests, and should give the names of 2 referees whom the University may consult. 2 copies of the application should reach the Secretary, Association of Universities of the British Commonwealth, 36, Gordon-square, London, W.C.1 (from whom a memorandum giving the general conditions of appointment should be obtained), not later than 31st October, 1955. An additional copy should be sent direct by air-mail to the Registrar, University of Cape Town, Private Bag, Rondebosch, Cape Town, South Africa, by the same date. The University reserves the right to recommend the appointment of a person other than one of the applicants or to recommend no appointment.

THE ROYAL NEW ZEALAND SOCIETY FOR THE HEALTH OF WOMEN AND CHILDREN (INC.). (PLUNKET SOCIETY.) CHIEF MEDICAL OFFICER. Applications for the above-named position are invited from registered medical practitioners with higher medical qualification and experience in preventive and curative pædiatrics. Salary £NZ2021 p.a., rising to £NZ2271 in 3 years.
Applications, which close on 5th November, 1955, should be addressed to the High Commissioner for New Zealand, 415, Strand, London, W.C.2, from whom particulars concerning conditions of appointment, duties, &c., may be obtained on request, quoting reference number A 18/159/2. Applications should state qualifications and experience and should be accompanied by 2 recent testimonials and a recent medical certificate. The earliest date on which the applicant would be available to take up duties should also be stated.

Hospital Services : Senior Appointments

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Part-time CONSULTANT in E.N.T. Surgery for 4 notional half-days a week, in the Bromley, Kent, Group of hospitals, for duty mainly at the Children's Hospital, Sydenham-road, Sydenham, S.E.26. Candidates must have had wide experience in E.N.T. surgery and be Fellows of a Royal College of Surgeons. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales). Candidates may visit the Hospital concerned.
Apply, stating nationality, age, sex, qualifications and experience, including details of present appointment and of war service, together with the names and addresses of 3 referees, to the Secretary, Advisory Appointments Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 8th October, 1955.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD requires Part-time CONSULTANT OPHTHALMOLOGIST (1 half-day per week) for the Chelsea Group of hospitals. Duties mainly at St. Stephen's Hospital, Chelsea, S.W.10.
Applications (5 copies), giving date of birth, qualifications, experience, names of 3 referees, to Secretary (S.1), South West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, by 22nd October, 1955. Applicants may visit hospitals by local arrangement.

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD.

(1) ASSISTANT PSYCHIATRIST (Senior Hospital Medical Officer grade), 4 half-days a week, Hertfordshire Child Guidance Service. Duties mainly at Welwyn Garden City Health Centre, a branch of the Hill End Child Guidance Clinic, which serves Hertfordshire. Applicants should have had full child guidance training and some additional clinic experience.

Clinic may be visited by appointment with the Medical Director, Hill End Clinic.

Applications by 26th October, 1955.

(2) 2 OPHTHALMOLOGISTS (part-time), Senior Hospital Medical Officer grade, at the following Middlesex County Council School Clinics :—

(i) Health Centre, Town Hall, Hendon. Wednesday mornings 2½ hours clinical time.

(ii) Health Centre, Oak-lane, Finchley. Alternate Wednesday mornings 2½ hours each visit.

Health Centre, Town Hall, Hendon ; or Health Centre, Cressingham-road, Burnt Oak. Alternate Saturday mornings 2½ hours each visit.

Clinics may be visited by arrangement with the Area Medical Officer, Town Hall, Hendon, N.W.4.

Applications by 28th October, 1955.

Application forms obtainable from, and returnable to, Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1.

ST. PETER'S, ST. PAUL'S AND ST. PHILIP'S HOSPITALS. A vacancy for an ANÆSTHETIST (Consultant) will occur on 1st January, 1956. 2 sessions weekly.

Applications, stating age and qualifications (9 copies) with names of 3 referees to the House Governor, at St. Peter's Hospital, Henrietta-street, W.C.2. Applicants must be of Consultant, or Senior Hospital Medical Officer grade. Closing date 15th October, 1955.

LEEDS. THE UNITED LEEDS HOSPITALS AND THE LEEDS REGIONAL HOSPITAL BOARD. An ANÆSTHETIST of Consultant status is required for part-time duties for 4 sessions per week at the United Leeds Hospitals and 4 sessions per week in hospitals under the control of the Leeds Regional Hospital Board. Candidates must have had extensive clinical experience in the administration of all types of anæsthesia and must hold a higher qualification in this specialty.

Applications, stating age, nationality, qualifications, full details of experience, with dates, and giving names of 3 referees, to be sent to the undersigned by 15th October, 1955.

J. ARNOLD TUNSTALL, Secretary to the Board of Governors,
The United Leeds Hospitals, Leeds, and Secretary
to the Advisory Appointments Committee.

MANCHESTER REGIONAL HOSPITAL BOARD.

(*a*) Whole-time or maximum Part-time Additional CONSULTANT RADIOLOGIST to the Oldham and District Hospital Centre (Oldham Royal Infirmary, Oldham District General Hospital, &c.). Wide experience and higher qualifications essential. 5th October, 1955.

(*b*) Part-time (6 notional half-days) CONSULTANT GENERAL SURGEON, at Withington Hospital, Manchester, 20 (mainly acute, 1000 Beds). Wide experience in general surgery essential, but training and experience in urology would be additional asset ; appointee to live in South Manchester area. 11th October, 1955.

(*c*) 2 Whole-time or maximum Part-time CONSULTANT ANÆSTHETISTS :—

(i) Wigan and Leigh Hospital Centre (Royal Albert Edward Infirmary, Wigan, Leigh Infirmary, &c.) and at Wrightington Hospital (thoracic and orthopædic surgery).

(ii) Salford Royal Hospital and Royal Manchester Children's Hospital, Pendlebury.

Higher qualification in anæsthetics essential, appointees to live in or near areas to which appointed. 10th October, 1955.

(*d*) Maximum Part-time ASSISTANT OPHTHALMOLOGIST (Senior Hospital Medical Officer) to the Stockport and Buxton Hospital Centre (Stockport Infirmary, Stepping Hill Hospital, &c.), including duties amounting to 2 half-days weekly at associated School Eye Clinics in Stockport C.B. 3rd October, 1955.

(*e*) Whole-time RESIDENT DEPUTY MEDICAL SUPERINTENDENT AND ASSISTANT PSYCHIATRIST (Senior Hospital Medical Officer) at Springfield Mental Hospital, Manchester (800 Beds). Temporary accommodation available in Hospital flat, modern detached house now being built in Hospital grounds. D.P.M. essential. 4th October, 1955.

(*f*) Whole-time NON-RESIDENT ASSISTANT CHEST PHYSICIAN (Senior Hospital Medical Officer) Barrow and Furness Hospital Centre, with duties under the general supervision of a Consultant at High Carley Hospital (major regional thoracic surgery centre) the Barrow and Ulverston Chest Clinics and other general and special hospitals in the Group. Experience in general medicine an asset. Higher medical qualification desirable. Successful applicant may be required to undertake duties in connection with prevention, care, and aftercare for the appropriate local health authorities as part of the appointment. 12th October, 1955.

Application forms from the Senior Administrative Medical Officer to the Board, Cheetwood-road, Manchester, 8, to be returned by dates stated.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD requires Whole-time ASSISTANT ORTHOPÆDIC SURGEON (Senior Hospital Medical Officer grade) for the St. Helier Group, for duty under the Consultant Orthopædic Surgeon mainly in the Casualty Department at St. Helier Hospital, Carshalton, Surrey.

Applications (5 copies), giving date of birth, qualifications, experience, names of 3 referees, to Secretary (S.1), South West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, by 22nd October, 1955. Applicants may visit Hospital by local arrangement.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD requires a Whole-time Locum Tenens ANÆSTHETIST of Consultant or Senior Hospital Medical Officer status for the Winchester Group of hospitals for approximately 3 months from 1st October.

Applications, giving names and addresses of 2 referees, to the Area Secretary, South West Metropolitan Regional Hospital Board, "Highcroft," Romsey-road, Winchester.

OXFORD REGIONAL HOSPITAL BOARD. Consultant DERMATOLOGIST (7 sessions a week) to the Hospitals in the Northampton and Kettering areas. The duties will include sessions at the Northampton General Hospital and an expansion of the work in the Kettering and Corby area.

Applications (12 copies), stating age, qualifications, experience, and names of 3 referees, to reach the Secretary of the Board, from whom further details can be obtained, at 43, Banbury-road, Oxford, by 15th October.

SCOTLAND. NORTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for appointment to the post of CONSULTANT ORTHOPÆDIC SURGEON which will be on a full-time basis in the first instance. Principal duties will be in hospitals and clinics in Aberdeen.

Applications (12 copies), together with the names of 2 referees, should be submitted before 21st October, 1955, to the Secretary of the Board, 1, Albyn-place, Aberdeen, from whom further particulars of the appointment may be obtained.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of Whole-time ASSISTANT PSYCHIATRIST AND DEPUTY PHYSICIAN-SUPERINTENDENT, Royal Scottish National Institution, Larbert. A house is available. Salary (at age 32 and over) on the scale £1500–£50–£1950. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (16 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, not later than 30 days after the publication of this advertisement.

NEW ZEALAND. THE OTAGO HOSPITAL BOARD, UNIVERSITY OF OTAGO, DUNEDIN, NEW ZEALAND. ASSISTANT DIRECTOR, Anæsthetic Services, Otago Hospital Board. LECTURER IN ANÆSTHETICS, Otago Medical School. Applications are invited for the above position, commencing on 1st January, 1956, from candidates who :—

(*a*) hold a higher qualification in anæsthetics and have had 5 or more years practical experience in this specialty, and have been qualified for not less than 10 years, or

(*b*) have been qualified for a period of 15 years or more, and have had 8 years or more practical experience in anæsthetics.

The position is a full-time one, and private practice is not permitted. The position is designed as that of Senior Specialist under the Hospital Employment (Medical Officers) Regulations and Amendments.

Salary scale : £1690 p.a.–£1940 p.a., plus general wage increase of £81 7s. p.a. Duties will include the practical teaching of anæsthetics to Medical and Dental Students. The position is non-resident.

Application forms and conditions of appointment may be obtained from THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2; the office of the High Commissioner for New Zealand, 415, Strand, London, or from the undersigned. Applications, stating age, qualifications, and experience, together with testimonials and Health and Radiological Certificates, will be received by the undersigned until 10 A.M. on Tuesday, 25th October, 1955. W. A. WILLIAMSON, Secretary, Otago Hospital.

P.O. Box 946, Dunedin, New Zealand.

Hospital Services : Junior Appointments

BETHNAL GREEN HOSPITAL, Cambridge Heath-road, London, E.2. (Acute General—309 Beds.) HOUSE SURGEON. Post recognised for F.R.C.S. and pre-registration purposes.

Applications, stating age, nationality, qualifications and experience, with copies of 2 testimonials, to the Hospital Secretary by 4th October, 1955.

BRITISH HOSPITAL FOR MOTHERS AND BABIES, Samuel-street, Woolwich, S.E.18. OBSTETRICAL HOUSE OFFICERS. 2 appointments vacant 2nd November, 1955, 1 Senior House Officer and 1 Junior House Officer. Both recognised for M.R.C.O.G. 6-month appointments and the Senior House Officer post may be renewed for a further period.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

BROMPTON HOSPITAL, S.W.3. Applications are invited for the post of NON-RESIDENT HOUSE PHYSICIAN for which there are 3 vacancies, for 6 months from 1st December, 1955. Duties include work in Outpatient Department and wards. Salary at the rate of £525 p.a.

Applications, stating age, qualifications with dates, nationality and appointments held, together with copies of testimonials, by 8th October, to—

KENNETH A. F. MILES, House Governor.

HAMMERSMITH HOSPITAL AND INSTITUTES OF OBSTETRICS AND CHILD HEALTH, Ducane-road, London, W.12. PÆDIATRIC REGISTRAR (resident) required mid-November. Duties include care of new-born babies in Maternity Department and Premature Baby Unit.

Applications, stating age, qualifications, experience, names of 2 referees, to Secretary, Board of Governors, by 3rd October.

HIGHLANDS GENERAL HOSPITAL, Winchmore Hill, London, N.21. HOUSE PHYSICIAN, vacant 28th October, 1955. Preference given to applicants seeking pre-registration post under Medical Act, 1950.

Applications, with copies of 3 testimonials, to Hospital Secretary.

CONNAUGHT HOSPITAL, Walthamstow, E.17. (118 Beds.) Applications are invited for the post of CASUALTY OFFICER AND DEPUTY RESIDENT SURGICAL OFFICER, graded as Senior House Officer, vacant now. Recognised for F.R.C.S. Salary £745 p.a., less £150 p.a. for board, lodging, &c.

Applications, with full details and copies of 2 recent testimonials, should be sent immediately to Secretary, Hospital Management Committee, Forest Group, Langthorne-road, E.11.

GERMAN HOSPITAL, Dalston, E.8. (General—157 Beds.) Applications from registered medical practitioners for the 12-month appointment of Resident Full-time CASUALTY OFFICER (Senior House Officer grade) should be sent to Group Secretary, Hackney Hospital Management Committee, London, E.9, quoting GH/SHO.

GUY'S HOSPITAL AND SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited to fill an established vacancy as SENIOR REGISTRAR in Obstetrics and Gynæcology until 30th September, 1958. The appointment will be made jointly by the bodies concerned and will be held in the first instance from 1st December, 1955, until 30th September, 1957, in the Bromley Group and will be renewable for the year commencing on 1st October, 1957, at Guy's Hospital until 30th September, 1958. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales).

Forms of application are obtainable from, and should be lodged with, the Superintendent, Guy's Hospital, S.E.1, not later than 6th October, 1955.

LAMBETH HOSPITAL, Brook-drive, S.E.11. Applications are invited for appointment of RESIDENT CASUALTY OFFICER, as from 1st November, 1955. The position is graded as Senior House Officer or House Officer, according to experience, and is recognised for the F.R.C.S.

Forms of application from the Physician-Superintendent.

MANOR HOUSE HOSPITAL, Golders Green, N.W.11 (exempted from National Health Service). Required, RESIDENT SURGICAL OFFICER (Male). Salary £745 p.a., less £130 p.a. for emoluments. 6 months appointment, renewable.

Applications, stating age, nationality, qualifications, and surgical or orthopædic experience, with copies of 3 recent testimonials, to Mr. W. F. PENDRILL, Secretary.

MILLER GENERAL HOSPITAL, Greenwich, S.E.10. Locum RESIDENT SURGICAL OFFICER required 3rd–16th October, 1955. Salary £17 10s. weekly, less £150 p.a. for residence (tel. : GREenwich 2655, Ext. 117).

PRINCE OF WALES'S GENERAL HOSPITAL, N.15. Applications are invited from registered medical practitioners for the post of RESIDENT PÆDIATRIC HOUSE PHYSICIAN (third post) for a period of 6 months from 24th November, 1955. Post recognised for D.C.H.

Application form from Secretary, Tottenham Group Hospital Management Committee, The Green, N.15, to be returned by 8th October, 1955.

PRINCESS BEATRICE HOSPITAL, Earls Court, London, S.W.5. CASUALTY OFFICER (some anæsthetic duties). Resident. Senior House Officer grade.

Applications, stating age, qualifications, with 3 testimonials, to House Governor not later than Thursday, 29th September, 1955.

PUTNEY HOSPITAL, Lower Common, Putney, S.W.15.
CASUALTY OFFICER AND E.N.T. HOUSE SURGEON, vacant 11th October.
CASUALTY OFFICER AND FRACTURE HOUSE SURGEON, vacant 19th October.

Both posts non-resident. Senior House Officer grade, recognised F.R.C.S.

Apply Hospital Secretary, enclosing 3 recent testimonials not later than 28th September.

QUEEN CHARLOTTE'S AND CHELSEA HOSPITALS.
Queen Charlotte's Maternity Hospital
JUNIOR OBSTETRIC OFFICER (Senior House Officer) resident posts tenable for 6 months from 1st January, 1956.
HOUSE SURGEON (Senior House Officer) resident post tenable for 1 year from 1st December, 1955.

Applications to the Secretary to the Board of Governors by 10th October, 1955, on forms obtainable from 339, Goldhawk-road, London, W.6.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, London, E.15. HOUSE PHYSICIAN (Male or Female) required (third post) for 6 months commencing 6th November, 1955.

Applications, with copies of recent testimonials, to Group Secretary, West Ham Group Hospital Management Committee, Stratford, E.15, by 26th September, 1955.

QUEEN MARY'S HOSPITAL (Roehampton), London, S.W.15. (532 Beds.) ORTHOPÆDIC REGISTRAR required for whole-time duty. National Health Service terms and conditions of service.

Detailed applications (9 copies), giving nationality, date of birth, qualifications and experience, including present appointments and the names of 3 referees, should reach Ministry of Health, Hospital Management Branch, Norcross, Blackpool, Lancashire, by 15th October, 1955.

ROYAL NATIONAL THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.1, and Golden-square, W.1. There will be a vacancy for an ANÆSTHETIC REGISTRAR (resident or non-resident) as from 1st November, 1955, to work as required at both hospitals. Applicants should have had some special experience in anæsthesia and preferably should hold, or be working for, a higher qualification in that specialty. Registrar grading and salary in accordance with the terms and conditions of service under the National Health Service Act.

Applications, giving full particulars of age, qualifications and experience, with the names of 2 referees, should be sent to the House Governor by 30th September.

ROYAL FREE HOSPITAL GROUP. Senior Registrar (Ophthalmic Departments). Applications are invited from suitably qualified Medical Practitioners for the post of Part-time SENIOR REGISTRAR (6 sessions per week) in the Ophthalmic Departments of the Royal Free Hospital Group. The appointment is for 1 year in the first instance, duties to commence on 1st December, 1955.

Formal application should be made to the Secretary to the Board of Governors, The Royal Free Hospital, Gray's Inn-road, W.C.1, before 15th October, 1955.

ROYAL MARSDEN HOSPITAL (formerly Royal Cancer Hospital), Fulham-road, S.W.3. Applications are invited for a Training post in Radiotherapy (Registrar grade). 2-year appointment with facilities for taking the D.M.R.T. examination. Course commencing 3rd October. Preference will be given to candidates holding a higher qualification in medicine or surgery.

Applications (on a form which will be supplied by the House Governor) together with the names of 2 referees, should be sent to the House Governor, as soon as possible.

ROYAL MARSDEN HOSPITAL, Fulham-road, London, S.W.3. Applications are invited from registered medical practitioners for the post of HOUSE SURGEON (resident) to commence duty on 23rd November, 1955. Salary £525 p.a. The post is tenable for 6 months.

Forms of application are obtainable from the House Governor, to whom applications, together with copies of 3 recent testimonials, should be sent not later than 5th October, 1955.

WANSTEAD HOSPITAL, Hermon Hill, E.11. (191 Beds.) Applications are invited for the post of CASUALTY OFFICER, recognised for F.R.C.S. Graded Senior House Officer. Salary £745 p.a., less £150 p.a. for board, lodging, &c.

Applications, with full details and copies of 2 recent testimonials, should be sent immediately to the Secretary, Forest Group Hospital Management Committee, Langthorne-road, E.11.

WHIPPS CROSS HOSPITAL, London, E.11. Leytonstone (NO. 10) HOSPITAL GROUP. Applications are invited from fully registered medical practitioners for the post of HOUSE SURGEON in the Orthopædic Department at above Hospital. This post, which is at present vacant, is recognised for the F.R.C.S.

Application forms from the Hospital Secretary, to whom they should be returned as soon as possible.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Whole-time REGISTRAR in Orthopædic Surgery to fill a vacancy in the approved trainee establishment at the Woolwich Group of hospitals. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs, (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications and experience with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, London, W.1, not later than 8th October, 1955.

SOUTH LONDON HOSPITAL FOR WOMEN AND CHILDREN, Clapham Common, S.W.4. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited from registered Women medical practitioners for the post of ANÆSTHETIC REGISTRAR (either resident or prepared to live within 20 minutes of the Hospital). D.A. desirable but not essential. Post recognised for D.A. Salary £850–£115–£965 p.a., less £150 p.a. for board, lodging, &c., if resident. The appointment is normally for 2 years. Canvassing will disqualify; but candidates are not precluded from visiting the Hospital if they so desire.

For form of application apply (enclosing stamped addressed envelope) to the Secretary, Lambeth Group Hospital Management Committee, Renfrew-road, S.E.11. Completed application forms should be returned not later than 8th October, 1955.

ST. CHARLES' HOSPITAL, Ladbroke-grove, W.10. (581 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (casualty), resident or non-resident.

Applications, stating age, qualifications and experience, together with the names and addresses of 2 referees, to be forwarded to the Hospital Secretary immediately.

ST. MARY'S HOSPITAL, W.2. Applications are invited for the post of Part-time REGISTRAR to the Psychiatric Department (inpatient and outpatient) for 4 notional half-days per week. Previous experience in psychiatry is necessary; preference will be given to candidates holding the D.P.M. The appointment will be for a first period of 12 months, as from a date to be arranged; remuneration at Registrar rates.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, details and National Health Service gradings of previous and present appointments, together with the names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, not later than 5th October, 1955.

ST. LEONARD'S HOSPITAL, Nuttall-street, London, N.1. (General—182 Beds.) Applications are invited from registered or provisionally registered practitioners for the post of HOUSE SURGEON for 6 months commencing 3rd November, 1955.

Applications, with 2 recent testimonials, to be sent to the Hospital Secretary by 8th October, 1955.

ST. PETER'S, ST. PAUL'S AND ST. PHILIP'S HOSPITALS. RESIDENT SURGICAL OFFICER (Senior Registrar grade), required for St. Paul's Hospital on 1st December, 1955. Applications invited from Male candidates on the British register who have completed their training in general surgery. Appointment for 6 months, with opportunity for a further 6 months if recommended. Candidates should be prepared to spend 1 year at the Hospital if required.

Applications (12 copies), with 12 copies of 3 recent testimonials, should reach the House Governor, St. Peter's Hospital, Henrietta-street, W.C.2, by 22nd October, 1955.

ST. PETER'S, ST. PAUL'S AND ST. PHILIP'S HOSPITALS. Required, SENIOR REGISTRAR (fifth year) for general laboratory duties and some emergency work. Good experience of bacteriology and serology desirable. Opportunities for research. Appointment on an annual basis.

Applications (12 copies) to the House Governor, St. Peter's Hospital, Henrietta-street, W.C.2, stating age, qualifications, and experience, and enclosing the names of 2 referees. Closing date 8th October, 1955.

ST. ANN'S GENERAL HOSPITAL, N.15. Applications are invited from registered medical practitioners for the post of RESIDENT HOUSE PHYSICIAN (Senior House Officer) to Pædiatric and Infectious Diseases Department for a period of 6 months from 10th November, 1955.

Application form from Secretary, Tottenham Group Hospital Management Committee, The Green, N.15, to be returned by 8th October, 1955.

ASCOT, BERKSHIRE. HEATHERWOOD ORTHOPÆDIC HOSPITAL. (212 Beds, adults and children.) Applications are invited for post of RESIDENT SENIOR HOUSE OFFICER (orthopædics). Appointment offers excellent opportunities to those reading for a higher qualification.

Applications, with names of 2 referees, to Hospital Secretary.

AYLESBURY, BUCKINGHAMSHIRE. STOKE MANDEVILLE HOSPITAL. Applications are invited for the post of RESIDENT HOUSE PHYSICIAN in the Department of Medicine. Pre-registration post but registered practitioners may apply. Duties include responsibility for 15 tuberculosis beds. Post vacant 2nd October, 1955.

Applications, with copies of 2 testimonials, to the Administrative Officer.

AYLESBURY, BUCKINGHAMSHIRE. STOKE MANDEVILLE HOSPITAL. Applications are invited for the post of HOUSE PHYSICIAN (Senior Resident Medical Officer) for the Acute General Medicine Unit, which comprises 2 Registrars and 3 Resident House Physicians. The post is of Senior House Officer grade, and is vacant on 26th September, 1955.

Applications, together with copies of 3 recent testimonials, to the Administrative Officer.

BANGOR. ST. DAVID'S HOSPITAL. (136 Beds and Cots. Specialist Hospital for obstetrics, gynæcology and pædiatrics. Part II Midwifery Training School.) Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER in the Gynæcological and Obstetrical Department of the above Hospital. Previous experience in obstetrics is essential. In the first instance, the post will be in gynæcology—there will be opportunity for transfer to the Obstetrical Department at the end of 6 months. The post is recognised by the Royal College of Obstetricians and Gynæcologists for the Membership examination. Salary according to scale. Post vacant 1st October, 1955.

Applications, stating age, qualifications and experience, together with copies of 3 recent testimonials, to be forwarded to the Group Secretary, Caernarvon and Anglesey Hospital Management Committee, Plas Gwyn, Ffriddoedd-road, Bangor, within 10 days of appearance of this advertisement.

BATH AND WESSEX ORTHOPÆDIC HOSPITAL. Applications are invited from medical practitioners for the post of HOUSE SURGEON (orthopædic) at the above Hospital. Post offers experience in "cold" orthopædics, including children, surgery of arthritis and traumatic surgery. The post is recognised for pre-registration purposes and is vacant in the near future.

Applications, stating age, qualifications and experience, with names of 2 referees or testimonials, to be addressed to Group Secretary, Bath Hospital Management Committee, Manor Hospital, Combe Park, Bath.

BATH. ROYAL UNITED HOSPITAL. Applications are invited from medical practitioners for the post of HOUSE PHYSICIAN at the above Hospital, which becomes vacant in November. The post is recognised for pre-registration purposes.

Applications, stating age, qualifications and experience, should be forwarded with 3 testimonials, to the Group Secretary, Bath Hospital Management Committee, Manor Hospital, Combe Park, Bath, by 8th October, 1955.

BEVERLEY, YORKSHIRE. WESTWOOD HOSPITAL. (229 Beds.) HOUSE SURGEON (first, second, or third post), vacant shortly. General surgical duties, some orthopædics. Offering good opportunity for general experience in busy acute General Hospital. Married quarters available. Recognised for F.R.C.S. Approved pre-registration post. Fully qualified practitioners may apply.

Applications to Group Secretary.

BIRMINGHAM AND MIDLAND EAR AND THROAT HOSPITAL, Edmund-street, BIRMINGHAM, 3. HOUSE OFFICER required. Pre-registration considered.

Detailed applications, with copies of 2 recent testimonials, to Secretary, Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM, 29. SELLY OAK HOSPITAL. Senior HOUSE OFFICER (pædiatrics). Recognised for D.C.H. Vacant October.

Applications, stating qualifications, experience and age, with copies of 3 testimonials, to Medical Superintendent.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS, THE QUEEN ELIZABETH HOSPITAL. Applications are invited for the post of MEDICAL REGISTRAR (Senior Registrar grade). The appointment is subject to annual review and the successful candidate may subsequently be required to spend not more than 2 years in a selected Hospital of the Birmingham Regional Hospital Board, in accordance with the arrangements for the interchange of Registrars agreed between the 2 Boards. The successful candidate may be required to be resident.

Forms of application may be obtained from, and should be returned not later than 8th October, 1955, to, the Secretary, United Birmingham Hospitals, Queen Elizabeth Hospital, Edgbaston, Birmingham, 15.

BIRMINGHAM. UNITED BIRMINGHAM HOSPITALS, BIRMINGHAM AND MIDLAND HOSPITAL FOR WOMEN, Showell Green-lane, SPARKHILL, BIRMINGHAM, 11. Applications are invited from registered medical practitioners for the post of RESIDENT GYNÆCOLOGICAL HOUSE SURGEON for duty with the Professorial Unit from 1st December, 1955. The appointment is recognised for the M.R.C.O.G.

Application forms, obtainable from the House Governor at the above address, to be returned not later than 10th October, 1955. G. A. PHALP, Secretary.

BIRMINGHAM REGIONAL HOSPITAL BOARD.

(1) Birmingham (Dudley Road) Group, Birmingham, 18

REGISTRAR (E.N.T. Surgery) resident, for Birmingham and Midland Ear and Throat Hospital. Recognised for D.L.O. and F.R.C.S.

(2) Robert Jones and Agnes Hunt Orthopædic Hospital, Oswestry

REGISTRAR (orthopædics—430 Beds), resident/non-resident. Experience specialty and higher surgical qualification desirable. Successful candidate will be required to spend part of his time at 1 of associated orthopædic units.

(3) Shrewsbury Group, Royal Salop Infirmary, Shrewsbury

REGISTRAR (anæsthetics), resident/non-resident. Recognised for D.A. and F.F.A.R.C.S. Duties mainly in Shrewsbury Group and Robert Jones and Agnes Hunt Orthopædic Hospital.

(4) South Warwickshire Group, 50, Holly-walk, Leamington Spa

(*a*) REGISTRAR (anæsthetics), vacant December. Duties mainly at Warneford General Hospital (207 Beds). Experience specialty essential.

(*b*) REGISTRAR (general surgery) for Stratford-on-Avon Hospital (187 Beds). Experience specialty desirable. Post recognised for F.R.C.S. and resident.

(5) Stoke-on-Trent Group, Princes-road, Hartshill

(*a*) MEDICAL REGISTRAR for City General Hospital (resident). Higher qualifications desirable, but not essential. Duties in acute Medical Unit (150 Beds) and large Outpatient Department. Facilities for research, particularly in cardiology and respiratory diseases.

(*b*) REGISTRAR in Psychiatry (resident or non-resident), for City General Hospital. The post offers exceptionally wide experience of all psychiatric treatment. The Department, which is an integral part of a fully equipped General Hospital, consists of 150 Beds, including 2 observation wards. The Unit is recognised for D.P.M. and the post carries 3 outpatient sessions.

(*c*) REGISTRAR (orthopædics) for North Staffs Royal Infirmary (475 Beds). Some duties at Hartshill Orthopædic Hospital (77 Beds). Non-resident. Experience specialty essential. Higher qualifications an advantage.

(6) Walsall Group, Wednesbury-road, Walsall

REGISTRAR (general medicine) resident, for Manor Hospital, Walsall (333 Beds). Experience specialty essential.

(7) West Bromwich and District Group, Edward-street, West Bromwich

REGISTRAR in Neurology or Neurosurgery for Midland Centre for Neurosurgery—Smethwick Hospital, Holly-lane, Smethwick. Considerable general experience necessary.

Application forms from Group Secretaries, to be returned before 10th October, 1955. Candidates may visit hospitals.

BIRMINGHAM. SUMMERFIELD HOSPITAL, Western-road, BIRMINGHAM, 18. JUNIOR HOSPITAL MEDICAL OFFICER required. Resident or non-resident. Vacant 1st November next. 1000 Beds for elderly and chronic sick and an active geriatric organisation. 4 Junior Hospital Medical Officers.

Applications, with copies of 3 recent testimonials, to Secretary, Dudley Road Hospital, Birmingham, 18.

BISHOP'S STORTFORD AND DISTRICT HOSPITAL, Rye-street, BISHOP'S STORTFORD, HERTS. (67 Beds—medical, surgical and maternity. Midway between London and Cambridge. Main Line Railway from Liverpool Street.) Applications are invited from registered medical practitioners for the appointment of RESIDENT SENIOR HOUSE OFFICER. Appointment to commence as soon as possible. Salary £745 p.a.

Applications, stating age, nationality, qualifications and experience, with copies of recent testimonials or names of referees, should be sent to the Hospital Secretary, Haymeads Hospital, Bishop's Stortford, Herts.

BISHOP'S STORTFORD, HERTFORDSHIRE. HAYMEADS HOSPITAL. (Midway between London and Cambridge. Main Line Railway from Liverpool Street.) Applications are invited for the appointment of HOUSE OFFICER (obstetrics, &c.) Male or Female, first, second, or third post held, to commence 1st November, 1955, for period of 6 months. Duties in connection with Obstetric Department, Neonatal Nursery and Pædiatric Ward of 24 Beds. Salary £425–£525 p.a., less £125 in respect of resident facilities.

Applications, stating qualifications, nationality, age and experience, with copies of testimonials, or the names of 2 referees, should be sent to the Hospital Secretary.

BRIGHTON AND LEWES HOSPITAL MANAGEMENT COMMITTEE GROUP HOSPITALS. (78 Beds.) Locum REGISTRAR required in the E.N.T. Department of the above Group, vacant early October. The Department is recognised for F.R.C.S. and D.L.O.

Applications, with details of experience, &c., and naming 2 referees, to the Administrative Officer, Royal Sussex County Hospital, Brighton, 7.

BRIGHTON. SUSSEX EYE HOSPITAL, Eastern-road, BRIGHTON, 7. (56 Beds.) HOUSE SURGEON required by mid-November. Recognised for the F.R.C.S. and D.O., under 23 (*b*).

Applications, stating age, qualifications and experience, naming 2 referees, to the Administrative Officer, Royal Sussex County Hospital, Brighton, 7.

BRIGHTON. ROYAL SUSSEX COUNTY HOSPITAL. (300 Beds.)

CASUALTY HOUSE SURGEON (1 of 3). Duties include work in Orthopædic and Traumatic Unit, vacant 1st November.

HOUSE SURGEON (including gynæcology), 8th November.

HOUSE SURGEON, 18th November.

Above posts recognised for pre-registration and F.R.C.S.

HOUSE PHYSICIAN, 16th November, recognised for pre-registration.

Applications, stating age, qualifications and experience, and naming 2 referees, to the Administrative Officer, Royal Sussex County Hospital, Brighton, 7.

BLACKBURN AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE.

Queen's Park Hospital, Blackburn (644 general beds)

HOUSE SURGEON required 1st November. Post recognised for F.R.C.S. and approved for pre-registration purposes.

Royal Infirmary, Blackburn (262 general beds)

HOUSE SURGEONS (2) required. 1 vacant end of September and 1 middle October. Posts recognised for F.R.C.S. and approved for pre-registration purposes.

Apply to Secretary, Hospital Management Committee Office, Royal Infirmary, Blackburn.

BLACKBURN (near). CALDERSTONES HOSPITAL, WHALLEY, near BLACKBURN, LANCASHIRE. (For Mental Defectives—2378 Beds.) CALDERSTONES HOSPITAL MANAGEMENT COMMITTEE. Applicants are invited for the appointment of Locum Tenens JUNIOR HOSPITAL MEDICAL OFFICER. Salary £17 10s. per week. Unfurnished house available for rent to married man. Residential quarters available for single man. No previous experience of mental diseases or mental deficiency necessary. This post would give valuable experience to practitioners who have the necessary 1 years experience after full registration and who are proposing to take up public health appointments and to study for the D.P.H. or D.P.M.

Applications, stating age, qualifications, and experience, together with the names and addresses of 3 referees, to be submitted to the Medical Superintendent, Calderstones Hospital, Whalley, near Blackburn, as soon as possible.

BLACKBURN. ROYAL INFIRMARY. (262 general beds.) BLACKBURN AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. JUNIOR HOSPITAL MEDICAL OFFICER (orthopædics and casualty) required 22nd October. Post can be for any reasonable period of up to 4 years and is recognised for F.R.C.S.

Apply to Secretary, Hospital Management Committee Office, Royal Infirmary, Blackburn.

BLACKPOOL. VICTORIA HOSPITAL. (348 Beds.) SENIOR HOUSE OFFICER (E.N.T. Department). Recognised for the D.L.O. and F.R.C.S. This is a busy general hospital with a large Outpatient Department. The post offers excellent opportunities for experience for a practitioner intending to take up otolaryngology as a career. It is the senior training post in the specialty, and reasonable off duty periods give ample time for study purposes.

Applications giving age, qualifications, experience and the names and addresses of 2 referees, should be sent to the Hospital Secretary.

BLACKPOOL. VICTORIA HOSPITAL. (348 Beds.) Applications are invited for the post of RESIDENT HOUSE OFFICER (gynæcology and obstetrics), which is recognised for M.R.C.O.G. and for pre-registration purposes. Post vacant 1st November, 1955. This is a busy general hospital with a large Outpatient Department and the post offers excellent opportunities for experience under Consultant Gynæcologists and Obstetricians.

Applications, with names and addresses of referees, to the Hospital Secretary.

BOLTON AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE.

The Royal Infirmary, Bolton (237 Beds)

RESIDENT SENIOR HOUSE OFFICER for duties in Casualty Department. Vacant early November, tenable for 12 months and recognised for F.R.C.S.

RESIDENT HOUSE SURGEON for general surgical duties. Vacant 28th October, tenable for 6 months and recognised under the Pre-registration Service scheme. Also recognised for F.R.C.S.

Applications, stating age, nationality, qualifications, experience, and the names of 2 referees, should be sent immediately to Group Secretary, The Royal Infirmary, Bolton.

BRAINTREE, ESSEX. BLACK NOTLEY HOSPITAL. Applications invited for the posts of HOUSE SURGEON and HOUSE PHYSICIAN. The successful applicant will serve 6 months as House Surgeon followed by 6 months as House Physician. First, second, third, or pre-registration posts. Surgical post includes duties in general surgical and gynæcological wards. Recognised for F.R.C.S. Medical post includes duties in medical and pædiatric wards.

Applications, with copies of 3 testimonials, to Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

BURY AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (pathology). Applications are invited for the above resident post which falls vacant early in December.

Apply, stating age, qualifications, experience, nationality, and names of 2 referees, to H. WILKINSON, Group Secretary.

Bury General Hospital, Bury, Lancs.

CANTERBURY. KENT AND CANTERBURY HOSPITAL. (276 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (casualty), which becomes vacant early in October, 1955. Salary £745 p.a. Recognised for the F.R.C.S.

Applications to be sent to the Hospital Secretary at the above Hospital, together with copies of 3 recent testimonials.

CANTERBURY. KENT AND CANTERBURY HOSPITAL. (276 Beds.) GENERAL SURGICAL AND UROLOGICAL HOUSE SURGEON (pre-registration or third post). The above post, which is recognised for the F.R.C.S., becomes vacant early in October, 1955. National Health Service salary and conditions.

Applications, together with copies of 2 recent testimonials, to be addressed to the Hospital Secretary at the above Hospital.

CAMBRIDGE. ADDENBROOKE'S HOSPITAL. DERMATOLOGICAL REGISTRAR. Vacant November for 1 year in the first instance, renewable for second year.

Apply, with full particulars and names of 3 referees, to Secretary by 5th October.

CARDIFF (near). CEFN MABLY HOSPITAL, St. Mellons, near CARDIFF. (158 Beds.) JUNIOR HOSPITAL MEDICAL OFFICER required 1st November. Salary £775–£50–£1075. Furnished flat available, rent £63. Pulmonary tuberculosis hospital, 7 miles from Cardiff. Physician-Superintendent also resident.

Write, quoting 2 referees, to T. A. JONES, Group Secretary. 64, Cardiff-road, Newport, Mon.

CARDIFF. ROYAL HAMADRYAD GENERAL AND SEAMEN'S HOSPITAL. RESIDENT SENIOR HOUSE OFFICER (surgical) required at above Hospital. Post covers 44 Beds—Genito-urinary, General Surgery, and Outpatients Department under care of Consultants from United Cardiff Hospitals.

Form of application from Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

CARDIFF. THE UNITED CARDIFF HOSPITALS. Applications are invited for the appointment of SENIOR REGISTRAR in the Department of Diagnostic Radiology. Candidates must hold a Diploma in Medical Radiology.

Application forms can be obtained from the Secretary, United Cardiff Hospitals, Cardiff Royal Infirmary.

CHEPSTOW, MONMOUTHSHIRE. ST. LAWRENCE HOSPITAL. (100 plastic surgery, 50 orthopædic beds.) SENIOR HOUSE OFFICER in Orthopædics required. Salary £745, less £150 board-residence. There are 2 Senior House Officers in Plastic Surgery and post provides extensive experience. The successful candidate will receive a thorough training from the Consultants and previous experience in specialty is not essential.

Apply, quoting 2 referees, to T. A. JONES, Group Secretary. 64, Cardiff-road, Newport, Mon.

CHEPSTOW, MONMOUTHSHIRE. PLASTIC SURGERY, JAW INJURIES AND BURNS CENTRE, ST. LAWRENCE HOSPITAL. (109 plastic surgery, 50 orthopædic beds.) SENIOR HOUSE OFFICER in Plastic Surgery required. Previous experience in specialty not essential. The Hospital intakes from most of Wales and the successful candidate will receive a thorough training. Second Senior House Officer in plastic surgery recently appointed and there is also a Senior House Officer in orthopædics. Senior Registrar non-resident, and 2 Registrars, all in plastic surgery, resident. Salary £745, less £150 board-residence.

Write, quoting 2 referees, to T. A. JONES, Group Secretary. 64, Cardiff-road, Newport, Mon.

CHELMSFORD AND ESSEX HOSPITAL. (162 Beds.) Applications are invited for the post of RESIDENT HOUSE SURGEON (pre-registration post). The post will become vacant in the middle of October, and offers good surgical experience and is recognised for the F.R.C.S.

Applications, together with 2 recent testimonials, to the Secretary, Chelmsford Hospital Management Committee, London-road, Chelmsford.

CHERTSEY, SURREY. ST. PETER'S HOSPITAL (late Botley's Park War Hospital). (430 Beds.) RESIDENT HOUSE SURGEON (Senior House Officer or Intern) required for the Gynæcological (30 Beds) and E.N.T. (16 Beds) Departments. Duties to commence immediately. Salary in accordance with terms and conditions of National Health Service.

Applications, together with names and addresses of referees, to be sent to the Physician-Superintendent, St. Peter's Hospital, as soon as possible.

COLCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for :—

Essex County Hospital, Colchester (188 Beds)

SENIOR HOUSE OFFICER (anæsthetics). Post tenable for 1 year. Recognised for F.F.A.R.C.S. and D.A. The successful candidate will be called upon to give anæsthetics in other hospitals in the Group.

SENIOR HOUSE OFFICER to Casualty and E.N.T. Departments. Post tenable for 6 months or 1 year. Recognised for F.R.C.S.

Applications, with copies of 3 testimonials, to Group Secretary, 14, Pope's-lane, Colchester, Essex.

CHICHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR in Gynæcology and Obstetrics. This appointment for 1 year (renewable) will be vacant 16th October. Gynæcological beds and clinics at Royal West Sussex and St. Richard's Hospitals, Chichester ; 16-Bed Obstetric Unit at St. Richard's ; and relief duties at 50-Bed unit at Rustington. Residence at St. Richard's Hospital. Previous experience in both branches essential. Hospitals may be visited by appointment with Consultant. Canvassing disqualifies. Salary (Whitley scale) £850 first, £965 second year, less (at present) £165 p.a. for residence. National Health Service superannuation scheme.

Application forms, to be had from Group Secretary, 174, Broyle-road, Chichester, must be submitted within 14 days of this notice.

CROYDON. MAYDAY HOSPITAL. (618 Beds.) HOUSE SURGEON (pre-registration) for period of 6 months commencing 1st October. Post recognised for F.R.C.S. Preference given to candidates who have held previous House Officer post.

Application forms obtainable from GEORGE A. PAINES, Group Secretary, Hospital Management Committee, General Hospital, Croydon, to be returned immediately.

CHESTERFIELD ROYAL HOSPITAL. Casualty Officer (pre-registration post or Senior House Officer) required immediately at above Hospital. Post offers valuable experience. National salary and conditions.

Apply M. H. BOONE, Secretary, Chesterfield Hospital Management Committee.

CHESTERFIELD HOSPITAL MANAGEMENT COMMITTEE. Whole-time JUNIOR HOSPITAL MEDICAL OFFICER required for Whittington Hall, Chesterfield (372 female mentally deficient patients), and Scarsdale Hospital, Chesterfield. Salary scale now £775–£50–£1075 p.a. Residential accommodation available for married officer at Dronfield Hospital.

Apply M. H. BOONE, Secretary, at Chesterfield Royal Hospital.

COLWYN BAY AND WEST DENBIGHSHIRE HOSPITAL. Applications are invited for the new appointment of JUNIOR HOSPITAL MEDICAL OFFICER for the above Hospital. This Hospital is a small general hospital with 48 acute surgical and orthopædic and 14 acute medical beds. Residence in Hospital or its immediate vicinity is essential. A self-contained flat is available if required. Consultants in all major specialties visit daily or at regular intervals.

Applications, stating age, qualifications and experience, with copies of 2 recent testimonials, to be forwarded to the undersigned within 7 days from the date of publication of this advertisement. WILLIAM ROBERTS, Group Secretary,

Clwyd and Deeside Hospital Management Committee.

"Rhianfa," Russell-road, Rhyl.

DAGENHAM HOSPITAL, Rainham-road South, Dagenham. There is a vacancy for the position of RESIDENT MEDICAL OFFICER (Junior Hospital Medical Officer grade) at the above Hospital of 155 Beds for pulmonary tuberculosis—all stages. Salary in accordance with the national scale (£775–£50–£1075 p.a.), less residential charges. Further particulars available from the Physician-Superintendent.

Applications, stating age, qualifications and previous experience, together with recent testimonials, should be sent to the undersigned within 7 days of the appearance of this advertisement. H. F. HARRIS, Group Secretary,

Ilford and Barking Group Hospital Management Committee.

King George Hospital, Ilford.

DONCASTER ROYAL INFIRMARY. (Recognised under the regulations for the Fellowship and D.L.O.) DONCASTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER in the E.N.T. Department. Post vacant now.

Applications to the Secretary to the Committee at the Doncaster Royal Infirmary.

DONCASTER ROYAL INFIRMARY. Doncaster Hospital MANAGEMENT COMMITTEE. Applications are invited for the post of ORTHOPÆDIC HOUSE SURGEON in the grade of Senior House Officer. £145 p.a. deducted for residential emoluments.

Applications should be forwarded to the Secretary to the Committee, Doncaster Royal Infirmary.

DOUGLAS, I.O.M. NOBLE'S ISLE OF MAN HOSPITAL. (160 Beds.) Applications are invited from registered medical practitioners with previous hospital experience, preferably at a teaching hospital, for the post of SENIOR HOUSE SURGEON at this busy General Hospital. The senior of 4 House Officer posts. The post becomes vacant at 31st October, and is suitable for candidate seeking further clinical experience and opportunity for reading for higher qualification. Salary £745 p.a., with a deduction of £125 p.a. for board, lodging, &c., if resident.

Applications, giving relevant particulars, and copies of 2 recent testimonials, or names and addresses of 2 referees, should be forwarded to the Secretary, Noble's Isle of Man Hospital, Douglas.

DOUGLAS, I.O.M. NOBLE'S ISLE OF MAN HOSPITAL. (160 Beds.) Applications are invited for the post of HOUSE SURGEON. The post is recognised for pre-registration purposes, and becomes vacant on 1st October. 4 residents on the staff. Salary £425–£475–£525 according to experience. A deduction of £125 a year for residential emoluments. Appointment for 6 months.

Apply immediately, giving full particulars and copies of 2 recent testimonials or names and addresses of 2 referees, to the Secretary, Noble's Isle of Man Hospital, Douglas.

DUDLEY, STOURBRIDGE AND DISTRICT HOSPITAL GROUP, BIRMINGHAM REGION.

The Corbett Hospital, Stourbridge (106 Beds)
SENIOR HOUSE OFFICER (casualty).

The Guest Hospital, Dudley (154 Beds)
SENIOR HOUSE OFFICER (casualty). Post recognised for F.R.C.S. examination.
SENIOR HOUSE OFFICER (anæsthetics). Post now vacant.
SENIOR HOUSE OFFICER (surgical). Post vacant September.

Wordsley Hospital, near Stourbridge (478 Beds)
SENIOR HOUSE OFFICER (anæsthetics). Resident. Previous experience house appointments essential. Experience available general surgery, gynæcology, orthopædics, plastic surgery unit.

Applications, stating age, experience, with copies of 3 recent testimonials, to Group Secretary, The Guest Hospital, Dudley, Worcs.

DURHAM, COUNTY HOSPITAL. (116 Beds.)
SENIOR HOUSE OFFICER (orthopædics) required immediately.
HOUSE OFFICER (orthopædics) required immediately.
Post recognised for pre-registration purposes.

The County Hospital is the main Orthopædic and Accident Hospital in a busy mining and industrial area and these posts offer facilities for good and varied experience in a busy hospital.

Apply, giving age, experience, and names of 2 referees, to Group Secretary, Dryburn Hospital, Durham.

DRIFFIELD, YORKSHIRE. NORTHFIELD SANATORIUM. (78 Beds.) SENIOR HOUSE PHYSICIAN. Vacant early October. Offers experience all branches of tuberculosis within Group, including surgery, mass miniature radiography, and clinics. Time for study. Ex-patients welcome. £165 for full residence.

Applications to Group Secretary, Westwood Hospital, Beverley, Yorkshire.

DUNDEE. WESTGREEN MENTAL HOSPITAL. Teaching HOSPITAL FOR QUEEN'S COLLEGE, ST. ANDREWS UNIVERSITY. Appointment of HOUSE OFFICER; salary according to national scale. Suitable flat available for married man at appropriate rental.

Applications, stating age, nationality, qualifications and experience, with recent testimonials, should be sent to the Physician-Superintendent.

EAST ANGLIAN REGIONAL HOSPITAL BOARD.
(1) SENIOR REGISTRARS in Psychiatry at:—
(*a*) St. Andrew's Hospital, Thorpe, Norwich (1250 Beds).
(*b*) Hellesdon Hospital, Norwich (960 Beds).

Each of these hospitals provides a wide range of modern treatments and outpatient clinic services at general hospitals in the area. There is a full staff of Consultants in psychiatry and other specialties at both hospitals. Houses available. Candidates applying for both posts should indicate any preference. Candidates invited to visit hospitals by direct arrangement with Medical Superintendents.

(2) ANÆSTHETIC REGISTRAR, Peterborough Memorial Hospital and Annexes. Post recognised for D.A. and F.F.A.R.C.S. and provides experience in all departments including a Thoracic Unit. Candidates invited to visit hospitals by direct arrangement with Hospital Management Committee Secretary, Memorial Hospital, Peterborough.

Applications, stating age, experience, and names of 3 referees, to Secretary of Board, 117, Chesterton-road, Cambridge, by 10th October, 1955.

EDINBURGH NORTHERN GROUP OF HOSPITALS. HOUSE SURGEONS required for the Thoracic Unit at the Eastern General Hospital, Edinburgh, 6.

Applications to the Medical Superintendent, Western General Hospital, Edinburgh, 4.

EPSOM DISTRICT HOSPITAL, Dorking-road, Epsom, SURREY. SENIOR HOUSE OFFICER (casualty) required 26th September. Post non-resident, recognised for F.R.C.S. 12-month appointment. Busy Casualty and Outpatient Department with excellent experience in minor and traumatic surgery. Candidates should have held previous House Officer posts.

Applications, stating age, qualifications, experience, with copies of 2 recent testimonials, should be sent as soon as possible to Group Secretary at above address.

GRIMSBY GENERAL HOSPITAL. Grimsby Hospital MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER for casualty duties required. Resident post. Recognised by Royal College of Surgeons for the Final Fellowship examination. Hours: normally 9 A.M.–6 P.M. Monday–Friday, 9 A.M.–NOON Saturday, sharing night duty on rota with all other resident staff. Establishment consists of Senior Hospital Medical Officer (casualty) and the post now being advertised. The Hospital possesses a well-equipped medical library.

Applications, with names and addresses of 2 referees, to the Hospital Secretary, Grimsby General Hospital.

HAROLD WOOD HOSPITAL, Harold Wood, Essex (near London). (415 Beds.) SENIOR HOUSE OFFICER (anæsthetics), resident. Main general and casualty hospital in Group. Recognised for D.A. and F.F.A.R.C.S.

Apply, giving full details, to the Hospital Secretary (Tel.: Ingrebourne 2881).

HASTINGS AND ST. LEONARDS. BUCHANAN HOSPITAL. (94 Beds.) HOUSE SURGEON in Gynæcology required (28 gynæcological beds). Post, recognised for M.R.C.O.G., vacant 22nd October for 6 months. Candidates for Pre-registration Service (surgery) can be considered. National scale of salary.

Apply, with names of 3 referees, to Hospital Administrator.

HAVERFORDWEST. PEMBROKE COUNTY WAR MEMORIAL HOSPITAL. (163 Beds. Recognised by the Royal College of Surgeons, and for Pre-registration Service.) WEST WALES HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER (surgical) which is now vacant. Salary and conditions of service as laid down by the Ministry of Health.

Applications, stating age, qualifications, experience, nationality, with names and addresses of 3 referees, to the Group Secretary, West Wales Hospital Management Committee, Glangwili, Carmarthen.

HENLEY-ON-THAMES, OXFORDSHIRE. PEPPARD CHEST HOSPITAL. (236 Beds.) Applications are invited for post of JUNIOR HOSPITAL MEDICAL OFFICER (resident), vacant immediately. Salary and conditions of service as recommended by Ministry of Health. Deductions for residence, &c., £150 p.a. Further particulars from Physician-Superintendent at Hospital.

Applications, stating age, nationality, qualifications with dates, present post, with copies of recent testimonials, to Acting Group Secretary, Reading and District Hospital Management Committee, 3, Craven-road, Reading.

HUDDERSFIELD ROYAL INFIRMARY. (312 Beds.) HUDDERSFIELD HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON to the Gynæcological and Abnormal Maternity Department required to commence duties on 16th October, 1955. The post is recognised for the D.Obst.R.C.O.G. and is a pre-registration appointment. Salary in accordance with national scale.

Applications, together with copies of 3 recent testimonials, to be addressed to the undersigned as soon as possible.

H. J. JOHNSON, Secretary to the Management Committee.

The Royal Infirmary, Huddersfield.

HERTFORD COUNTY HOSPITAL. (171 Beds. Hospital situated 21 miles from London.) RESIDENT CASUALTY OFFICER (Senior House Officer grade) with attachment to Pædiatrician and Ophthalmic Consultant. Salary £745 p.a., less £130 p.a. residential emoluments. Recognised under F.R.C.S. regulations. Appointment to commence 20th November, 1955.

Apply, with full details and references, to Group Secretary, Hertford Hospital Management Committee, County Hospital, Hertford, Herts.

HITCHIN, HERTFORDSHIRE. LISTER HOSPITAL. Applications are invited for the post of RESIDENT HOUSE SURGEON, vacant 20th October, 1955. Recognised as pre-registration post.

Applications, stating age, nationality, qualifications and experience, together with copies of 3 recent testimonials, to be sent to the Medical Administrator as soon as possible.

HOUNSLOW CHEST CLINIC, 28, Bell-road, Hounslow, MIDDLESEX. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR (whole-time), non-resident, required at above Clinic. Post vacant 1st November, 1955. Clinic has associated beds at Ashford Hospital, Middlesex, and West Middlesex Hospital. Good general medical experience essential and special experience in diseases of the chest desirable. Candidates may visit Clinic by direct appointment.

Application forms obtainable from, and returnable to, Secretary, Staines Group Hospital Management Committee, Ashford Hospital, London-road, Ashford, Middlesex, by 4th October, 1955.

HULL. KINGSTON GENERAL HOSPITAL. (426 Beds.) HULL A GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of HOUSE SURGEON (mainly gynæcological). Pre-registration post. Post now vacant—resident and tenable for 6 months.

Applications, giving full details, and copies of 2 recent testimonials, to the Hospital Secretary.

HUNTINGDON COUNTY HOSPITAL. Applications are invited for the post of HOUSE OFFICER (medical). Post recognised for pre-registration purposes. The selected candidate will be required to look after medical and pædiatric cases and may be called upon to give emergency anæsthetics. Post vacant early October.

Apply, with full particulars and names of 2 referees, to Group Secretary, Hospital Management Committee Offices, Newmarket General Hospital, Newmarket.

ILFORD AND BARKING GROUP HOSPITAL MANAGE-MENT COMMITTEE. ILFORD ISOLATION HOSPITAL, Grove-road, CHADWELL HEATH, ESSEX. There is a vacancy for the position of RESIDENT MEDICAL OFFICER (chest diseases) (Junior Hospital Medical Officer status) at the above Hospital where there are 69 beds for pulmonary tuberculosis. Salary £775 (for an officer appointed not less than 2 years after registration as a medical practitioner)–£50–£1075 p.a. The Officer appointed would be expected to work under the general direction of the Chest Physician, Ilford, and to undertake some duties at Ilford Chest Clinic as may be directed by the Chest Physician.

Applications, stating age, qualifications and previous experience, together with recent testimonials, should be sent to the undersigned within 7 days of the appearance of this advertisement.

H. F. HARRIS, Group Secretary.

King George Hospital, Ilford.

ILFORD. KING GEORGE HOSPITAL, Eastern-avenue, ILFORD. There will be a vacancy for a HOUSE PHYSICIAN at above Hospital on 22nd October, 1955. Second post pre-registration. The post will be tenable for 6 months.

Applications, giving full particulars, and accompanied by testimonials, should be sent to the undersigned within 7 days of the appearance of this advertisement.

H. F. HARRIS, Group Secretary,

Ilford and Barking Group Hospital Management Committee.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. Senior HOUSE OFFICER required for Admissions and Casualty Department. Must have held medical and surgical posts.

Applications, stating age, nationality, qualifications and experience, with copies of up to 3 recent testimonials, to Group Secretary, South West Middlesex Hospital Management Committee, West Middlesex Hospital, Isleworth, by 4th October, 1955.

IPSWICH. ST. HELEN'S HOSPITAL. (100 Beds for infectious diseases, pulmonary tuberculosis and long-stay orthopædics. The Area Chest Clinic is in the Hospital.) HOUSE PHYSICIAN required (post-registration appointment). Accommodation available for married man.

Applications to JOHN WILLIAMS, Group Secretary, Ipswich Group Hospital Management Committee, at the Ipswich and East Suffolk Hospital (Anglesea Road Wing), Ipswich.

IPSWICH AND EAST SUFFOLK HOSPITAL. Anglesea ROAD WING. (356 Beds.) Applications are invited for the post of HOUSE SURGEON to the Fracture and Orthopædic Department. Approved pre-registration post.

Applications, with copies of recent testimonials, to the Hospital Secretary.

IPSWICH AND EAST SUFFOLK HOSPITAL (Heath ROAD WING), IPSWICH. (270 Beds.) Applications invited for post of HOUSE SURGEON (House Officer) to General Surgeons vacant on 27th October, 1955. Pre-registration post, 6 months duration, recognised for R.C.S. examinations.

Applications, stating age, experience, and qualifications, with copies of recent testimonials, to Hospital Secretary.

IPSWICH AND EAST SUFFOLK HOSPITAL (Heath ROAD WING), IPSWICH. (270 Beds.) Applications invited for post of SENIOR HOUSE OFFICER (medical). The post, which is vacant on 9th October, is normally of 12 months duration. This post, which involves Pædiatric Registrar duties, provides excellent opportunities for study for higher qualifications.

Applications, stating age, qualifications and experience, with copies of recent testimonials, to the Hospital Secretary.

IPSWICH AND EAST SUFFOLK HOSPITAL (Heath ROAD WING), IPSWICH. (270 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (Fracture and Orthopædic Department). The post which becomes vacant on 20th October, 1955, is normally of 1 years duration. It is recognised as part of the necessary surgical experience for the Final F.R.C.S.

Applications, stating age, qualifications and experience, together with recent testimonials, to the Hospital Secretary.

ILKLEY. MIDDLETON HOSPITAL. (430 Beds.) Resi-DENT SENIOR HOUSE OFFICER (surgical) required for Major Thoracic Surgical Unit at the above Hospital, tenable from 16th October, 1955.

Applications, stating age, nationality, qualifications, and experience, to Hospital Secretary.

KETTERING AND DISTRICT HOSPITAL MANAGE-MENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of SENIOR HOUSE OFFICER in Anæsthetics, vacant 1st October, 1955, recognised for D.A.

Applications, giving details of qualifications and enclosing copies of recent testimonials to be sent to the Secretary, General Hospital, Kettering.

KIDDERMINSTER AND DISTRICT GENERAL HOS-PITAL. (112 Beds.) Locum HOUSE SURGEON required at the above Hospital.

Applications, with the names of 3 referees, to the Hospital Secretary.

KIDDERMINSTER AND DISTRICT GENERAL HOS-PITAL. (112 Beds.) Applications are invited for the pre-registration post of HOUSE SURGEON at the above Hospital.

Application, with the names of 3 referees, to the Hospital Secretary.

LEEDS, 2, PUBLIC DISPENSARY AND HOSPITAL. LEEDS A GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of CASUALTY OFFICER (Senior House Officer) at the above Hospital. The appointment, which is recognised by the Royal College of Surgeons for Fellowship, will be for a period of 1 year. Salary in accordance with the agreed terms and conditions of service of hospital medical and dental staffs, with an appropriate deduction in respect of board, lodging, &c.

Applications, stating age, qualifications, experience, &c., together with the names of 2 referees, to be forwarded to the undersigned as soon as possible.

J. FOLKARD, Secretary to the Committee.

Administrative Offices, St. James's Hospital, Leeds, 9.

LEEDS REGIONAL HOSPITAL BOARD. Registrar posts in General Medicine :—

(*a*) Scarborough, Bridlington, Malton and Whitby Group, 67 medical beds (non-resident).

(*b*) Regional Rheumatism Centre, Harrogate (240 Beds) (9 sessions) and the Rheumatism Clinic, General Infirmary at Leeds (2 sessions). Resident at Royal Bath Hospital, Harrogate.

Applications, stating age, qualifications and details of appointments held, showing dates, with names and addresses of 3 referees, to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, by 6th October, 1955.

LEEDS. THE UNITED LEEDS HOSPITALS. The GENERAL INFIRMARY AT LEEDS. RESIDENT ORTHOPÆDIC OFFICER (Senior House Officer status) required, as from 1st November, 1955. The post will be for an initial period of 6 months, renewable for a further 6 months thereafter.

Applications, stating age, qualifications and previous posts with dates, with the names of 3 referees, should reach the Secretary to the Board by 3rd October, 1955.

LEEDS. THE UNITED LEEDS HOSPITALS. Applica-tions are invited for the post of REGISTRAR in Pædiatrics at the General Infirmary at Leeds, which will shortly become vacant. The appointment will be non-resident and will be for 1 year in the first instance.

Application, giving age, full details of qualifications, and previous posts with dates, together with the names of 3 referees, are to be forwarded not later than 3rd October, 1955, to the Sub-Dean, School of Medicine, Leeds, 2.

LEWES (near). CHAILEY HERITAGE (Craft School AND HOSPITAL), NORTH COMMON, CHAILEY, near LEWES, SUSSEX. (305 Beds.) MID SUSSEX HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER required for Children's Orthopædic Unit with orthopædic clinics. Good experience for long term orthopædic and pædiatric work. 1 years previous house appointment essential. Post now vacant. Salary under National Health Service regulations.

Applications, with 2 referees names, should be forwarded to the Medical Administrator.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. Applications are invited for a post of REGISTRAR in Medicine for the period to 30th September, 1956. Annual reappointment thereafter until completion of the normal period of training will be considered without need for further application.

Apply by 8th October, 1955, on form obtainable from the Secretary, 80, Rodney-street, Liverpool, 1.

LEICESTER. MARKFIELD SANATORIUM. (163 Beds.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR (chest diseases) required. Post becomes vacant 16th November, 1955. Duties will include attendance at Chest Clinics associated with Sanatorium under supervision of the Consultant. Minor thoracic procedures are carried out and the staff closely associated with the neighbouring major Thoracic Surgical Unit. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 3rd October, 1955, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

LEICESTER ISOLATION HOSPITAL AND CHEST UNIT, Groby-road, LEICESTER. (328 Beds.) Applications are invited for the appointment of RESIDENT SENIOR HOUSE OFFICER (surgical). Salary £745 p.a., less £150 p.a. residential emoluments. The appointment is tenable for 6 months and may be extended for a further period of 6 months. Experience will be gained in all branches of thoracic surgery, including cardiac surgery. The post is recognised for the Final Fellowship.

Applications,, giving age, qualifications, dates, &c., and copies of 2 recent testimonials, to be forwarded as soon as possible to the Department of Thoracic Surgery, Leicester Isolation Hospital and Chest Unit.

LUTON AND DUNSTABLE HOSPITAL. (250 Beds.) NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. ANÆSTHETIC REGISTRAR (resident) required at above Hospital and associated units (134 Beds). Post vacant now, and recognised for D.A. The Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Secretary, Luton and Hitchin Group Hospital Management Committee, St. Mary's Hospital, Luton, Beds, by 5th October, 1955.

LUTON, BEDFORDSHIRE. ST. MARY'S HOSPITAL. Applications are invited for the post of SENIOR HOUSE OFFICER, vacant 18th October, 1955 (129 beds mainly for chronic sick and 33 beds for chest diseases). The post includes outpatient work in the chest clinic.

Applications, stating age, nationality, qualifications, and experience, together with copies of 3 recent testimonials, should be sent to the Secretary, Luton and Hitchin Hospital Management Committee, St. Mary's Hospital, Luton, Beds, as soon as possible.

MACCLESFIELD HOSPITAL. West Park Branch. Applications invited for resident post of OBSTETRIC/GYNÆCOLOGICAL HOUSE OFFICER (pre-registration post), vacant 7th October, 1955. Post recognised for D.Obst.R.C.O.G. training; 28 obstetric, 30 gynæcological beds in unit.

Apply, with testimonials, immediately to Group Secretary, Macclesfield and District Hospital Management Committee, "Willerby House," Cumberland-street, Macclesfield.

MAIDENHEAD HOSPITAL, St. Luke's-road, Maidenhead. Applications invited from registered practitioners for the post of CASUALTY OFFICER, vacant now. Post recognised for F.R.C.S. Salary on House Officer scale, plus £50 p.a.

Applications, stating age, qualifications, and nationality, with copies of testimonials or names of 3 referees, to Hospital Secretary.

MAIDENHEAD HOSPITAL, St. Luke's-road, Maidenhead. Applications invited from registered practitioners for post of HOUSE PHYSICIAN, vacant 4th November.

Applications, stating age, qualifications, experience and nationality, with names of 3 referees, to Hospital Secretary.

MAIDSTONE. WEST KENT GENERAL HOSPITAL. (141 Beds.) MID KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of RECEIVING ROOM OFFICER. Salary £745 a year, with a deduction of £150 a year for residential emoluments.

Applications to the Administrative Officer at the Hospital as soon as possible.

MARGATE. ROYAL SEA BATHING HOSPITAL. (Surgical Tuberculosis and Orthopædics, 241 Beds.) SENIOR HOUSE OFFICER. This post, now vacant, is largely an orthopædic one, and affords experience in the treatment of tuberculous and non-tuberculous orthopædic conditions. There is also a genito-urinary unit of 35 beds and a small number of beds for other tuberculous conditions. The post is suitable for someone reading for a higher surgical examination. Salary £745 p.a., less £150 for residential emoluments.

Applications, with copies of testimonials, to be sent to the Hospital Secretary.

MANCHESTER. CRUMPSALL HOSPITAL. (General—1225 Beds.) Applications are invited for the post of REGISTRAR in Obstetrics and Gynæcology at the above Hospital. Recognised for M.R.C.O.G. and preference given to applicants possessing this qualification. This post offers extensive clinical experience.

Applications by 5th October, 1955, to Group Secretary, North Manchester Hospital Management Committee, Crumpsall Hospital, Manchester, 8.

MANCHESTER. ROYAL MANCHESTER CHILDREN'S HOSPITAL. MANCHESTER REGIONAL HOSPITAL BOARD. SALFORD HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT SURGICAL OFFICER (Registrar grade), falling vacant October, 1955. Previous experience in surgery essential. The Hospital is the chief teaching unit of the University Department of Child Health and the post gives ample opportunity for experience in all branches of surgery in children.

Applications, stating age, nationality and experience, together with names of 3 referees, to be forwarded to the Group Secretary, Salford Royal Hospital, Chapel-street, Salford, 3, to be received not later than 5th October, 1955.

MANCHESTER REGIONAL HOSPITAL BOARD AND THE BOARD OF GOVERNORS OF THE UNITED MANCHESTER HOSPITALS. SENIOR REGISTRAR in Anæsthetics. The person appointed will spend a period of approximately 2 years in the United Manchester Hospitals (Manchester Royal Infirmary) and a similar period in the North Manchester Group of Hospitals (mainly Crumpsall Hospital) and at Booth Hall (Childrens) Hospital. It has not yet been decided at which centre the successful applicant will initially take up duties. F.F.A.R.C.S. desirable.

Forms of application, obtainable from the Senior Administrative Medical Officer, Manchester Regional Hospital Board, Cheetwood-road, Manchester, 8, should be returned by 3rd October, 1955.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the post of REGISTRAR in General Medicine, vacant from 1st November, to the Blackpool and Fylde Group of hospitals, with main duties at Victoria Hospital, Blackpool.

Applications, stating age, qualifications, experience, together with the names and addresses of 2 referees, should be addressed to the Group Secretary, Blackpool and Fylde Hospital Management Committee, Victoria Hospital, Blackpool.

MANCHESTER. DUCHESS OF YORK HOSPITAL FOR BABIES, LEVENSHULME, MANCHESTER, 19. SOUTH MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIAN (Male or Female) required immediately for 6 months at above Hospital which is attached to the Manchester University of Child Health.

Applications, together with names of 3 referees, to be sent to the Administrative Officer at the Hospital.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS, MANCHESTER. Applications are invited for the post of HOUSE OFFICER in Gynæcology. Applicants must have had previous hospital experience in medicine and surgery. The posts are recognised for the purposes of the M.R.C.O.G. examination. The appointment is for 6 months starting 1st January, 1956. Salary in accordance with national scale.

Application forms may be obtained from the undersigned and returned not later than 17th October, 1955.

A. R. WISE, General Superintendent.

Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL EYE HOSPITAL. Applications are invited for SENIOR HOUSE OFFICER post. Salary £745 p.a., less £155 p.a. for residential emoluments.

Application forms may be obtained from the undersigned.

H. R. NORTH, General Superintendent.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS, MANCHESTER. Applications are invited for the post of REGISTRAR in the Neonatal Unit of Saint Mary's Hospitals (attached to the University Department of Child Health). The post is full-time and resident and vacant 1st December, 1955. It is preferable but not essential that candidates should hold a higher qualification. Previous experience in pædiatrics essential. The post is tenable for 12 months and the salary is in accordance with the national scale.

Application forms may be obtained from the undersigned and should be completed and returned by 3rd October, 1955.

A. R. WISE, General Superintendent.

Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL INFIRMARY, MANCHESTER, 13. SENIOR REGISTRAR to the Orthopædic Department, to commence as soon as possible. Whole-time, non-resident appointment for 12 months, renewable. Applicants must possess a higher qualification. Arrangements may eventually be made for the successful candidate to transfer to 1 of the Manchester Regional Hospitals to continue training.

Application to be made on form obtainable from the undersigned, to be returned not later than 8th October, 1955.

F. J. CABLE, Secretary to the Board of Governors.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS, MANCHESTER. Applications are invited for the post of SENIOR HOUSE OFFICER in Obstetrics. Applicants must have had previous hospital experience in general medicine and surgery, and in obstetrics. The post is recognised for purposes of the M.R.C.O.G. examination. The duties involve clinical responsibility for mothers and babies, and supervision of the work of pre-registration House Officers is also included. The appointment is for 12 months from 1st November, 1955. National scale.

Application forms may be obtained from the undersigned and returned not later than 3rd October, 1955.

A. R. WISE, General Superintendent.

Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER. WEST MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. PARK HOSPITAL, DAVYHULME. (General Hospital—433 Beds.) 1 SENIOR HOUSE OFFICER (non-tuberculous thoracic surgery) required for Manchester Regional Hospital Board Centre. Post now vacant.

Forms from Secretary.

MANCHESTER, 20. WITHINGTON HOSPITAL, South MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (surgical) including casualty duties, vacant immediately. The post is recognised by the Royal College of Surgeons for the Final F.R.C.S. examination and possession of the Primary F.R.C.S. will be an advantage. The Hospital is recognised by the Manchester University for the teaching of undergraduate surgical students.

Applications, stating age, qualifications, nationality, present post, experience, and names of 2 referees, to be forwarded to the Group Secretary at the Hospital as soon as possible.

MANCHESTER, 23. WYTHENSHAWE HOSPITAL. SOUTH MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER (surgical) at the above Hospital.

Applications, stating age, qualifications, present post, experience, and names of 2 referees, to be forwarded to the Group Secretary, Withington Hospital, Manchester, 20, immediately.

MANCHESTER. CHRISTIE HOSPITAL AND HOLT RADIUM INSTITUTE. MANCHESTER REGIONAL HOSPITAL BOARD. SOUTH MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the post of REGISTRAR in Radiotherapy at the above Hospital. Candidates must hold either the Diploma in Radiotherapy or an F.R.C.S. or M.R.C.P. If the latter they would be eligible for Diploma in Radiotherapy course commencing in April, 1956.

Applications, with full details, to be forwarded to the Group Secretary, Withington Hospital, Manchester, 20, immediately.

NEWCASTLE GENERAL HOSPITAL. Newcastle upon TYNE HOSPITAL MANAGEMENT COMMITTEE. DEPARTMENT OF OBSTETRICS. (70 Beds.) The resident post of OBSTETRICAL HOUSE SURGEON becomes vacant on 1st November, 1955. This post is recognised for the purpose of Pre-registration Service, and preference will be given to provisionally registered persons who have served 6 months in a medical or surgical post since qualification. The department is recognised for the Diploma of M.R.C.O.G., and D.Obst.R.C.O.G., and undertakes the training of Medical Students in the University of Durham.

Applications to the Secretary, Newcastle General Hospital, Westgate-road, Newcastle upon Tyne, 4, accompanied by 1 copy of 2 recent testimonials by 15th October, 1955.

NEWCASTLE REGIONAL HOSPITAL BOARD. Sunderland Area Hospital Management Committee. SENIOR REGISTRAR ORTHOPÆDIC SURGEON (whole-time) at Sunderland Orthopædic and Accident Hospital (120 Beds). The Hospital is an accident centre for the above Hospital Management Committee and deals with a large number of fracture cases. In addition, all types of chronic orthopædic cases in adults and children are dealt with, including tuberculosis of bone and joint. A sanatorium of 50 additional beds is attached to the Hospital.

Applications, with names and addresses of 3 referees, to Senior Administrative Medical Officer, Newcastle Regional Hospital Board, Walker Gate Hospital, Benfield-road, Newcastle upon Tyne, 6, within 14 days.

NEWPORT, MONMOUTHSHIRE. ROYAL GWENT HOSPITAL. (260 Beds. Recognised F.R.C.S.) 2 SENIOR HOUSE OFFICERS required for Casualty Department, 1 early in October and the other about 1st November. This is the base Hospital in the Group and all medical and surgical emergencies are admitted through casualty, which is under the full-time charge of a Senior Hospital Medical Officer. A new department with excellent facilities has recently been opened. Post recognised F.R.C.S. for 6 months, and tenable 6 or 12 months as desired. Salary £745, less £125 for board-residence.

Write, quoting 2 referees, to T. A. JONES, Group Secretary, 64, Cardiff-road, Newport, Mon.

NORWICH. ST. ANDREW'S HOSPITAL, Thorpe, NORWICH. Applications are invited from registered medical practitioners (Male or Female) for the appointment of SENIOR HOUSE OFFICER (psychiatric). The Hospital has 1200 Beds, an admission-rate of over 500 p.a., and affords comprehensive experience in psychiatry. The salary and conditions of service will be as laid down by the Ministry for Senior House Officers. Residential accommodation with board available.

Applications, stating age, qualifications, and full particulars of experience, together with names and addresses of 2 referees, to be sent as soon as possible to the Medical Superintendent.

NORTHAMPTON GENERAL HOSPITAL. (485 Beds.) Vacancies exist 1st October, 1955, for the following :—

SENIOR HOUSE OFFICER (Department of Pathology).

SENIOR HOUSE OFFICER (Casualty Department). Recognised for F.R.C.S.

HOUSE OFFICER (Casualty Department). Recognised for F.R.C.S. and for pre-registration.

HOUSE OFFICER (general surgery). Recognised for F.R.C.S. and for pre-registration.

All 6-month appointments in the first instance. Deduction £125 a year for residential emoluments.

Names of 2 referees should accompany applications for post of Senior House Officer Pathology and copies of 3 recent testimonials for other posts.

Applications to S. G. HILL, Superintendent.

NORTHAMPTON GENERAL HOSPITAL. (485 Beds.) Vacancy 1st October, 1955, for PÆDIATRIC HOUSE OFFICER. Post recognised for D.C.H. and for pre-registration. 6 months appointment in first instance. Person appointed will be required to reside alternately with another Pædiatric House Officer, for 3 month periods at Northampton General Hospital and Harborough Road Hospital, Northampton, and whilst at the latter hospital, to be responsible to the Consultants for the supervision of all the beds, allocated as follows : Subacute pædiatric 20, dermatological 16, general medical 24, infectious diseases 52 (mostly children but including polios).

Applications as soon as possible to S. G. HILL, Superintendent.

NORTH WEST METROPOLITAN REGIONAL HOS-PITAL BOARD. Whole-time REGISTRAR in Dermatology, based on West Middlesex Hospital, Isleworth (1142 Beds). Duties will include also clinics at hospitals in the Uxbridge, Staines, and Windsor Groups. Appointment for 1 year in first instance. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Group Secretary, South West Middlesex Group Hospital Management Committee, West Middlesex Hospital, Isleworth, by 4th October, 1955.

NORTH EAST METROPOLITAN REGIONAL HOS-PITAL BOARD.

SURGICAL REGISTRAR (resident or non-resident), Haymeads Hospital, Bishop's Stortford, Herts. Appointment subject to review after 1 year.

Application forms from Secretary, 11A, Portland-place, W.1, to be returned by 8th October, 1955.

OSWESTRY. THE ROBERT JONES AND AGNES HUNT ORTHOPÆDIC HOSPITAL. SENIOR SURGICAL HOUSE OFFICER (resident) required. Appointment in the first place for 6 months with a possibility of extension.

Applications, with copies of 2 recent testimonials, to be sent to the Secretary at once.

NOTTINGHAM CHILDREN'S HOSPITAL. (136 Beds) Recognised for the D.C.H.) Applications are invited for the post of RESIDENT HOUSE PHYSICIAN (pre-registration. which falls vacant mid-October. The post is tenable for 6 months.

Applications, with copies of 2 testimonials, should be sent to the Secretary, Nottingham Children's Hospital, Chestnut-grove, Nottingham.

NOTTINGHAM GENERAL HOSPITAL. Applications are invited from registered medical practitioners for the post of SENIOR ORTHOPÆDIC AND FRACTURE HOUSE OFFICER, duties to commence at an early date. The post offers exceptional experience in traumatic surgery. Salary and conditions of service in accordance with Ministry Regulations.

Applications, stating age, qualifications and experience, nationality, &c., together with copies of testimonials, to be sent to the Group Secretary.

OXFORD REGIONAL HOSPITAL BOARD. Registrar in Pædiatrics to the hospitals of the Northampton and Kettering area, with duties mainly at Northampton General Hospital. Applicants holding, or wishing to take the D.C.H. preferred. The appointment will be for 1 year and eligible for extension to 2 years.

Applications on forms obtainable from the Secretary, Registrar Committee, 43, Banbury-road, Oxford, should reach him by 8th October.

OXFORD REGIONAL HOSPITAL BOARD. Registrar to the Geriatric Department of the Battle Hospital, Reading (162 Beds). This is a new appointment providing wide experience. Appointment for 1 year, renewable for further year.

Applications on forms from the Secretary, Registrar Committee, 43, Banbury-road, Oxford, to be returned by 8th October.

OXFORD. UNITED OXFORD HOSPITALS. Applications invited for post of NON-RESIDENT REGISTRAR in E.N.T. Department of the Radcliffe Infirmary, for 1 year in the first instance, but eligible for extension to 2 years, with effect from 1st January, 1956. Candidates should possess the Primary F.R.C.S.

Applications, on forms obtainable from the Administrator, Radcliffe Infirmary, Oxford, should reach him not later than 12th October, 1955.

OXFORD. UNITED OXFORD HOSPITALS. Applications invited for the non-resident post of REGISTRAR to Thoracic Surgery Unit at the Churchill Hospital, for 1 year in the first instance, but eligible for extension to a second year, with effect from 1st January, 1956.

Applications, on forms obtainable from the Administrator, Radcliffe Infirmary, Oxford, must reach him by 20th October, 1955

OXFORD. UNITED OXFORD HOSPITALS. Applications invited for post of NON-RESIDENT REGISTRAR to the Accident Service at the Radcliffe Infirmary, Oxford, for 1 year in the first instance, eligible for extension to second year, with effect from 1st January, 1956.

Applications, on forms obtainable from the Administrator, Radcliffe Infirmary, Oxford, should reach him not later than 12th October, 1955.

PERTHSHIRE. BRIDGE OF EARN HOSPITAL. Applications are invited for the following posts :—

HOUSE SURGEON or SENIOR HOUSE SURGEON for Fracture and Orthopædic Unit. Grade according to experience.

SENIOR HOUSE SURGEON (E.N.T. Unit).

Applications, giving age, qualifications, experience, and names of 2 referees, should be sent to the Group Medical Superintendent, Perth Royal Infirmary, Perth.

PLYMOUTH. MOUNT GOLD ORTHOPÆDIC HOS-PITAL (with Annexe 122 Beds). PLYMOUTH SPECIAL HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for 2 posts of SENIOR HOUSE OFFICER for the Orthopædic and Fracture Service, centring on Mount Gold Orthopædic and associated hospitals. House available for 1 post. Position recognised by the Royal College of Surgeons. Vacancy immediately.

Applications, stating age, qualifications with dates, &c., and with copies of 2 recent testimonials, to be forwarded to the Secretary, Mount Gold Hospital, Plymouth, within 14 days of this advertisement appearing.

PLYMOUTH, SOUTH DEVON AND EAST CORNWALL GENERAL HOSPITAL GROUP. SOUTH DEVON AND EAST CORNWALL HOSPITAL, DEVONPORT. HOUSE SURGEON (pre-registration post), vacant 1st December, 1955.

Applications, stating age, nationality, qualifications, and experience, with names of 3 referees, to be sent to—

ARTHUR R. CASH, Group Secretary.

7, Nelson-gardens, Stoke, Plymouth.

PLYMOUTH, SOUTH DEVON AND EAST CORNWALL GENERAL HOSPITAL GROUP. SOUTH DEVON AND EAST CORNWALL HOSPITAL, PLYMOUTH.

SENIOR HOUSE OFFICER in Anæsthetics, vacant immediately. Recognised for the D.A. and Fellowship. This appointment will be for a period of 12 months.

Locum SENIOR HOUSE OFFICER in Anæsthetics, immediately, for indefinite period.

Applications, stating age, nationality, qualifications, and experience, with names of 3 referees, to be sent to the undersigned as soon as possible.

ARTHUR R. CASH, Group Secretary.

7, Nelson-gardens, Stoke, Plymouth.

PONTEFRACT AND CASTLEFORD HOSPITAL MAN-AGEMENT COMMITTEE. JUNIOR HOSPITAL MEDICAL OFFICER to assist Geriatric Physician in hospitals of this and Wakefield A Hospital Management Committee. Accommodation available.

Applications to Secretary, Gt. Northern House, Salter-row, Pontefract, Yorks.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE.

Royal Portsmouth Hospital (104 orthopædic and 70 surgical beds)

SENIOR HOUSE OFFICER (Orthopædic Department), vacant now.

HOUSE OFFICER (orthopædic), vacant now.

Applications, stating age, experience and qualifications, together with names of 2 referees, should be forwarded as soon as possible to L. C. ROGERS,

35, Grove-road South, Southsea.

READING. ROYAL BERKSHIRE HOSPITAL. (401 Beds.) Applications are invited from registered medical practitioners, Male and Female, for the resident post of JUNIOR HOUSE SURGEON (gynæcology), vacant 1st October, 1955, for 6 months.

Write, stating age, qualifications with dates, nationality and present post, with copy of recent testimonial, to Secretary.

REDHILL. EAST SURREY HOSPITAL. Shrewsbury-road, REDHILL, SURREY. (139 Beds.) HOUSE SURGEON required immediately.

Apply to the Hospital Secretary.

RHYL. ROYAL ALEXANDRA HOSPITAL. (138 Beds.) CLWYD AND DEESIDE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of CASUALTY OFFICER (Senior House Officer grade) at the above Hospital. Post recognised for F.R.C.S.

Applications, stating age, nationality, qualifications and experience, accompanied by copies of 2 recent testimonials, should be sent forthwith, to the Group Secretary, "Rhianfa," Russell-road, Rhyl.

ROCHDALE AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of RESIDENT CLINICAL PATHOLOGIST (Senior House Officer grade) in the Department of Pathology of the Rochdale Group of hospitals. The duties will consist mainly of clinical pathology, also general and emergency work and supervision of the blood banks. Previous pathology experience is not essential.

Applications, giving usual particulars and names and addresses of 2 referees, to Group Secretary, Central Offices, Birch Hill Hospital, Rochdale, Lancs, at once.

ROCHFORD, ESSEX. GENERAL HOSPITAL. Locum GERIATRIC REGISTRAR required. Duties to commence 1st October, 1955, for approximately 1 month, pending the post being advertised by the North East Metropolitan Regional Hospital Board.

Apply immediately to J. C. FIELD, Secretary.

SALFORD ROYAL HOSPITAL. (258 Beds—General.) SALFORD HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (medical). Appointment for 1 year, vacant September. Salary subject to a deduction of £140 p.a. for board and lodging.

Applications, with copies of 3 recent testimonials, should be sent to the Secretary, Salford Royal Hospital, Chapel-street, Salford, 3.

SALFORD ROYAL HOSPITAL. (258 Beds—General.) SALFORD HOSPITAL MANAGEMENT COMMITTEE. Applications invited for the appointment of SENIOR HOUSE OFFICER (Orthopædic and Casualty Departments), resident. Post now vacant. Recognised F.R.C.S. Gives opportunity for experience in emergency surgery. Salary subject to deduction of £140 p.a. for board and lodging.

Applications, with copies of 3 recent testimonials, should be sent to the Secretary, Salford Royal Hospital, Chapel-street, Salford, 3, Lancs.

SALISBURY GENERAL HOSPITAL. Applications are invited for the appointment of RESIDENT HOUSE SURGEON/OBSTETRIC AND GYNÆCOLOGICAL HOUSE SURGEON (recognised by R.C.O.G.) to run consecutively in this order from 2nd November, 1955, for a period of 6 months in each post. The posts are open to pre-registration candidates.

Apply, enclosing 2 recent references, to Group Secretary, Salisbury Group Hospital Management Committee, Odstock Hospital, Salisbury.

SCARBOROUGH HOSPITAL. (General—190 Beds.) Applications are invited for the post of NON-RESIDENT CASUALTY OFFICER (Junior Hospital Medical Officer) to commence duty 1st November. Terms and conditions of service in accordance with those prescribed for medical and dental staffs. A furnished cottage is available for the successful applicant in the grounds of Cross Lane Hospital (1 mile distant) for which an appropriate charge will be made.

Applications, giving age, qualifications, details of present and previous appointments, and the names of 2 referees, should be forwarded to the Hospital Secretary.

SCUNTHORPE AND DISTRICT WAR MEMORIAL HOSPITAL. (267 Beds. Recognised for training for F.R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT or NON-RESIDENT REGISTRAR (orthopædics) required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 3rd October, 1955, giving age nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SHREWSBURY. ROYAL SALOP INFIRMARY. (241 Beds.) ORTHOPÆDIC/ACCIDENT HOUSE SURGEON (Senior House Officer). Successful applicant will be allowed to attend for 2 days a month at the Robert Jones and Agnes Hunt Orthopædic Hospital, Oswestry, for postgraduate study, with the Consultant. Post recognised under revised Fellowship regulations in respect of 6 months training required for the Final Fellowship examination.

Applications, with copy testimonials, to Group Secretary, Shrewsbury Hospital Group, Royal Salop Infirmary, Shrewsbury.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of SENIOR REGISTRAR in Orthopædic Surgery for Regional duties to circulate in the sectors of the Royal, Victoria and Western Infirmaries, Glasgow, which will be for 1 year in the first instance. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, by 1st October, 1955.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the following appointments, which will be for 1 year in the first instance :—

REGISTRAR in E.N.T. Surgery based at the Royal Infirmary, Glasgow.

REGISTRAR in Bacteriology based at the Western Infirmary, Glasgow.

REGISTRAR in Pathology based at the Western Infirmary, Glasgow.

REGISTRAR in Pathology based at the Southern General Hospital, Glasgow.

REGISTRAR in Psychiatry based at the Southern General Hospital, Glasgow.

REGISTRAR in Ophthalmology based at the Eye Infirmary, Glasgow.

These appointments are subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, by 1st October, 1955.

SCOTLAND. NORTHERN REGIONAL HOSPITAL BOARD. Applications are invited for a NON-RESIDENT SENIOR REGISTRAR in Radiology with duties mainly at the Royal Northern Infirmary, and Raigmore Hospital, Inverness. Candidates should hold a Diploma in Radiology and have previous practical experience in diagnostic radiology.

Applications, on schedules to be obtained from the undersigned, should be submitted by 1st October, 1955.

A. M. FRASER, M.D.,
Secretary and Administrative Medical Officer.
Office of the Northern Regional Hospital Board,
Raigmore, Inverness.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. Applications are invited for the following posts :—

(*a*) SENIOR REGISTRARS in General Medicine at the Royal Hospital (2 posts).

(*b*) SENIOR REGISTRAR in General Surgery at the Royal Hospital.

(*c*) SENIOR REGISTRAR to the E.N.T. Department, Royal Infirmary.

The above appointments are for 1 year in the first instance and will be reviewed annually. It has been agreed in principle between the Board of Governors of The United Sheffield Hospitals and the Sheffield Regional Hospital Board that the appointments, if extended to the full period of 4 years, will be divided, subject to satisfactory work and progress, between the above hospitals and hospitals in the Region.

Closing date for applications, 30th September, 1955.

(*d*) ANÆSTHETIC REGISTRAR (non-resident) at the Royal Hospital. Applications immediately.

(*e*) Locum SENIOR REGISTRAR in Obstetrics and Gynæcology, Jessop Hospital for Women. Required immediately.

In each case, applications stating age, qualifications and experience, with the names of 3 referees, should be sent to the Chief Administrative Officer, The United Sheffield Hospitals, West-street, Sheffield, 1.

SKIPTON (near). GRASSINGTON HOSPITAL. Application invited for RESIDENT MEDICAL OFFICER at the above Hospital. Appointment is that of Senior House Officer or Junior Hospital Medical Officer, according to experience. The Hospital caters for tuberculous patients, men and women. This is a repeat advert, previous applicants need not re-apply.

Apply to Medical Superintendent.

SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL. WINDSOR GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER (casualty) required, 1 of 2, for busy Casualty Department. Experience provided in orthopædic and plastic cases.

Applications, stating age and qualifications together with copies of 2 testimonials, to Hospital Secretary.

SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL. Locum ANÆSTHETIC REGISTRAR required 8th–23rd October.

Application, stating qualifications and experience, with names of 2 referees, to Hospital Secretary.

SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL. WINDSOR GROUP HOSPITAL MANAGEMENT COMMITTEE. Locum HOUSE OFFICER (casualty) required for post vacant 23rd September. Experience provided in orthopædic and plastic cases.

Applications, stating age and qualifications, with copies of 2 testimonials, to Hospital Secretary.

SMETHWICK. MIDLAND CENTRE FOR NEUROSURGERY, SMETHWICK HOSPITAL, SMETHWICK, 41. (75 Beds.) SENIOR HOUSE OFFICER (resident). Appointment for 1 year (renewable) will be available from 1st November, 1955. Salary £745, less £168 for board, lodging, &c.

Applications, with names of 2 referees, to the Group Secretary, West Bromwich and District Hospitals Management Committee.

SOUTHAMPTON CHILDREN'S HOSPITAL. (Recognised by Conjoint Board for D.C.H.) HOUSE OFFICER required. Total establishment of 3 residents. Salary, &c., as nationally advocated.

Applications, with copies of testimonials, to be submitted immediately to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL (278 Beds) AND SOUTHAMPTON GENERAL HOSPITAL (471 Beds). SENIOR HOUSE OFFICER (E.N.T.) required immediately. This post is recognised for the F.R.C.S. (Eng.) and D.L.O. examinations and provides experience in all branches of E.N.T. work, including audiometry. The Group includes a diagnostic and distributing hearing-aid centre.

Applications, with copies of recent testimonials, should be forwarded as soon as possible to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL. (278 Beds.) 2 RESIDENT HOUSE PHYSICIANS required beginning November. Pre-registration candidates eligible.

Applications, with copies of testimonials, should be forwarded to Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton, as soon as possible.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL. (278 Beds. Recognised for F.R.C.S.) RESIDENT HOUSE SURGEON required mid-October. Pre-registration candidates eligible.

Applications, with copies of testimonials, should be forwarded to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL. (Orthopædic Unit—100 Beds.) SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the post of ORTHOPÆDIC REGISTRAR to a team of 3 Orthopædic Surgeons at the above Hospital. This Hospital is the centre to which all trauma cases from a large industrial town and port are directed, thus providing excellent experience in the treatment of traumatic conditions; patients with orthopædic conditions are also drawn from a wide area. The successful candidate will be required to perform clinical duties at peripheral hospitals. The post, which becomes vacant in November, is recognised for the Fellowship.

Forms of application may be obtained from the undersigned, to whom they should be returned by 12th October, 1955.

FRANK JENNINGS, Group Secretary,
Southampton Group Hospital Management Committee.
Bullar-street, Southampton.

ST. ALBANS CITY HOSPITAL, St. Albans, Hertfordshire. (384 Beds.) RESIDENT JUNIOR HOSPITAL MEDICAL OFFICER required for duties mainly in the Gynæcological and Obstetrics Department of the above Hospital. Post tenable for 1 year in the first instance. Hospital recognised for D.Obst. R.C.O.G.

Applications to Group Secretary, Mid Herts Group Hospital Management Committee, Bleak House, Catherine-street, St. Albans.

SWANSEA. MOUNT PLEASANT HOSPITAL. (236 Beds.) GLANTAWE HOSPITAL MANAGEMENT COMMITTEE. Registered medical practitioners are invited to apply for the resident appointment of JUNIOR HOSPITAL MEDICAL OFFICER (Female) for work in the Medical and Surgical Departments, and in the Chronic Sick Wards of the above Hospital.

Applications, stating age, experience, and qualifications, with copies of 2 recent testimonials, should be addressed to the Hospital Secretary.

SWANSEA HOSPITAL, Swansea. (407 Beds.) Glantawe HOSPITAL MANAGEMENT COMMITTEE. Registered medical practitioners are invited to apply for the resident appointment of SENIOR HOUSE OFFICER in the Traumatic and Orthopædic Department of the above Hospital. The post is recognised under the F.R.C.S. regulations for 6 months casualty training. It offers exceptional experience in all aspects of traumatic surgery as occuring in a large industrial centre and port.

Applications, stating age and experience, together with copies of 2 recent testimonials, should be forwarded to the Hospital Secretary.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. HOUSE OFFICER (medical) required. Post vacant 30th September. Recognised pre-registration.

Applications (2 testimonials) to Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. HOUSE OFFICER (general surgery). 2 posts vacant shortly. Recognised F.R.C.S. and pre-registration.

Applications to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT HOSPITAL MANAGEMENT COMMITTEE. RESIDENT ASSISTANT CLINICAL PATHOLOGIST to the Stoke-on-Trent Group of hospitals, vacant October. Single accommodation at North Staffs Royal Infirmary. The post is of Junior Hospital Medical Officer status, but applications from practitioners with less than the required 2 years qualification period will be considered, in the grade of Senior House Officer. The post offers exceptional experience in hospital laboratory work. Laboratory recognised for D.C.P. and Diploma in Pathology.

Detailed application, with particulars of previous appointments held (3 testimonials), to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent, as soon as possible.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. HOUSE OFFICER (general surgery), vacant shortly. Recognised F.R.C.S. and pre-registration.

Applications to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. (455 Beds.) SENIOR HOUSE OFFICER (ophthalmology) required. Recognised F.R.C.S. and D.O.

Applications to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. STANFIELD SANATORIUM. (71 Beds—Tuberculosis.) JUNIOR HOSPITAL MEDICAL OFFICER required. Post vacant 30th September—Resident.

Applications to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

SOUTHPORT PROMENADE HOSPITAL. Senior House OFFICER (Physician). This resident post vacant 16th November.

Apply, stating age, qualifications, experience and nationality with 2 copy testimonials, to Group Secretary, Southport and District Hospital Management Committee, Promenade Hospital, Southport.

SOUTHPORT GENERAL INFIRMARY. (185 Beds.) JUNIOR HOSPITAL MEDICAL OFFICER (resident), wholetime casualty post vacant 5th October.

Apply, stating age, qualifications, experience, and nationality, with 2 copy testimonials, to Group Secretary, Southport and District Hospital Management Committee, Promenade Hospital, Southport.

TAUNTON AND SOMERSET HOSPITAL. Applications are invited for the post of HOUSE OFFICER (E.N.T.), vacant from 1st October, 1955. Pre-registration appointment.

Applications, stating age, nationality, and qualifications, together with the names of 2 referees, should be forwarded immediately to the Group Secretary, Taunton Hospital Management Committee, Taunton and Somerset Hospital, Musgrove Park Branch.

VENTNOR, I.W. ROYAL NATIONAL HOSPITAL FOR DISEASES OF THE CHEST. (249 Beds.) Required, JUNIOR HOSPITAL MEDICAL OFFICER or SENIOR HOUSE OFFICER (resident post). Hospital has all facilities for major thoracic surgery.

Applications, with names of 2 referees, to Physician-Superintendent.

WAKEFIELD. PINDERFIELDS GENERAL HOSPITAL. Applications invited for appointment of JUNIOR HOSPITAL MEDICAL OFFICER for the Leeds Regional Thoracic Centre (59 Beds) at Pinderfields General Hospital. The Centre deals with thoracic and upper abdominal surgery in association with the Thoracic Consultants of the General Infirmary at Leeds. Salary scale £775–£50–£1075 p.a., less a charge of £155 for board, lodging, &c.

Address written applications with full particulars and 2 names and addresses for reference to—

W. BOWRING, Group Secretary.
Victoria Chambers, Wood-street, Wakefield.

WARRINGTON GENERAL HOSPITAL. (368 Beds.) Applications are invited from persons experienced in anæsthetics for the post of RESIDENT ANÆSTHETIST (Male or Female), graded as Senior House Officer. The Hospital is recognised for the D.A. examination. Salary £745 p.a., less a deduction of £130 p.a. for residential emoluments.

Applications, stating qualifications and experience, should be sent to— H. L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee.
c/o General Hospital, Warrington, Lancs.

WARRINGTON INFIRMARY. (172 Beds.) Applications are invited for a vacancy at the above Hospital for a RESIDENT HOUSE SURGEON (Male or Female). Recognised for pre-registration. Salary will be £425–£525 p.a., less a deduction of £125 for full residential emoluments.

Applications should be sent to—
H. L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee.
c/o, General Hospital, Warrington, Lancashire.

WATFORD CHEST CLINIC. North West Metropolitan REGIONAL HOSPITAL BOARD. Applications invited for the post (vacant 31st October) of REGISTRAR at Watford Chest Clinic, Peace Memorial Hospital, Watford, to include duties on the tuberculosis wards (65 Beds) of the associated hospitals. This is a new Chest Clinic. A car is necessary—usual allowances paid. Experience of refill techniques essential, sanatorium experience desirable. Applicants invited to visit the Clinic and should contact the Physician-in-charge.

Application form obtainable from, and returnable to, the Secretary, West Herts Group Hospital Management Committee, 9, Rickmansworth-road, Watford, by not later than 10 days after the appearance of this advertisement.

WELSH REGIONAL HOSPITAL BOARD.

REGISTRAR (general surgery), Pembroke County War Memorial Hospital, Haverfordwest. Resident or non-resident.

REGISTRAR (Anæsthetic Department), Morriston General Hospital, near Swansea. Centre for neurosurgery, thoracic, and dental surgery. Post recognised for F.F.A.R.C.S. and D.A. examinations. Resident/non-resident.

Subject to review end of first year.

Application forms from Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 14 days.

WEST BROMWICH AND DISTRICT GENERAL HOSPITAL. (144 Beds.) HOUSE SURGEON (pre-registration) vacant 1st October, 1955.

Applications, with 3 recent testimonials, to Group Secretary, West Bromwich and District Hospital Management Committee, Edward-street, West Bromwich.

WEYMOUTH AND DISTRICT HOSPITAL. (124 Beds.) HOUSE PHYSICIAN (pre-registration), Male or Female, required mid-October. 6 months post.

Applications, stating age, qualifications and nationality, together with 2 copy testimonials, to Group Secretary, West Dorset Hospital Management Committee, Damers-road, Dorchester, Dorset, immediately.

WIGAN. ROYAL ALBERT EDWARD INFIRMARY. (200 Beds.) SENIOR HOUSE OFFICER in Orthopædic Surgery. Post vacant 1st October.

Applications to Secretary, Wigan Infirmary.

WIGAN. ROYAL ALBERT EDWARD INFIRMARY. HOUSE PHYSICIAN (Senior House Officer grade) for duty in the Pædiatric Department at Wigan Infirmary, and also to undertake neonatal work at Billinge Hospital. Post recognised for D.C.H. Consultant Pædiatrician in charge.

Applications, with names of 2 referees, to the Secretary, Royal Albert Edward Infirmary, Wigan.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. (315 Beds.) SENIOR HOUSE OFFICER (orthopædics) required. Post recognised F.R.C.S. Wide experience available under Area Orthopædic team. Appointment for 6 months in first instance. Vacant 10th October.

Applications, with copies of 2 testimonials, to the Secretary.

WOLVERHAMPTON GROUP.

The Royal Hospital (an Associated Hospital of the University of Birmingham Medical School)
SENIOR HOUSE OFFICER or HOUSE OFFICER (Fracture and Orthopædic Department), vacant now.

New Cross Hospital
HOUSE OFFICER (general surgery), vacant now. Pre-registration post.

The Royal Hospital (Women's Hospital)
Locum REGISTRAR or SENIOR REGISTRAR (obstetric/gynæcology) required for 10 weeks commencing 24th October, 1955.
HOUSE OFFICER (gynæcological and obstetric), vacant 26th October. Appointment recognised for M.R.C.O.G. Pre-registration post.

Eye Infirmary
SENIOR HOUSE OFFICER required for 7th October, 1955. 100 Beds and busy Outpatient Department. Recognised for F.R.C.S. and D.O.M.S. examinations.
Apply, with copies of testimonials, to Secretary, The Royal Hospital, Wolverhampton.

WORKSOP. KILTON HOSPITAL. (190 Beds.) Sheffield REGIONAL HOSPITAL BOARD. Whole-time RESIDENT MEDICAL REGISTRAR required. Post vacant 20th November, 1955. Appointment for 1 year in first instance. The Kilton Hospital contains the medical division of the Worksop Group. The successful candidate will be responsible for the supervision of 42 acute medical beds and also of the dermatological and pædiatric beds.
Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 3rd October, 1955, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

WORTHING HOSPITAL, Lyndhurst-road, Worthing. WORTHING GROUP HOSPITAL MANAGEMENT COMMITTEE. Locum RESIDENT SURGICAL REGISTRAR required from 28th September to 12th November, 1955, whilst present holder is away on a course. F.R.C.S. qualification desirable. Salary at the rate of £17 10s. per week.
Applications giving details of age, experience, and qualifications, together with copy testimonials to be forwarded to the Hospital Secretary immediately.
A. V. OAKTON, Group Secretary.

CORK SANATORIA BOARD. Applications are invited for the post of Temporary HOUSE PHYSICIAN at Heatherside Sanatorium, Buttevant, Co. Cork. The post is whole-time, temporary and non-pensionable. Remuneration will be at the rate of £6 per week together with board, residence and laundry.
Completed forms should be lodged not later than NOON on Monday, 3rd October, 1955, with the undersigned from whom application forms and further particulars may be obtained.
D. O'DONOVAN, Secretary.
Monument Buildings, 42, Grand-parade, Cork.

CORK SANATORIA BOARD. Applications are invited for the office of JUNIOR MEDICAL OFFICER at Heatherside Sanatorium, Buttevant, Co. Cork. The office is whole-time, temporary and non-pensionable. Remuneration will be at the rate of £650 p.a. plus temporary bonus at the rate of 8½ per cent., subject to a deduction of £150 in respect of emoluments (viz., rations, apartments, attendance, fuel, light and laundry) provided.
Completed forms should be lodged not later than 5 P.M. on Monday, 10th October, 1955, with the undersigned from whom application forms and further particulars may be obtained.
D. O'DONOVAN, Secretary.
Monument Buildings, 42, Grand-parade, Cork.

NEW ZEALAND. THE OTAGO HOSPITAL BOARD, DUNEDIN, NEW ZEALAND. DEPARTMENT OF SURGERY. ORTHOPÆDIC AND TRAUMATIC UNIT. SENIOR ORTHOPÆDIC REGISTRAR, Dunedin Hospital. Applications are invited for the position of Senior Orthopædic Registrar, to commence duties on 1st January, 1956, or as soon as possible thereafter. The applicant must possess a higher qualification in surgery, and have had extensive experience in orthopædic and traumatic surgery. His duties will include the teaching of Medical Students, Nurses, and Physiotherapy Students. The appointment is for a minimum of 1 year, and tenable up to 3 years, subject to termination by 3 months notice in writing from either side. The salary payable under the Hospital Employment (Medical Officers) Regulations, 1952, and Amendments, is £806 5s. p.a., rising by annual increments of £57 10s. to a maximum of £921 5s. p.a., plus cost-of-living bonus of £81 p.a. A living-out allowance of £179 8s. p.a. is payable in addition to the above salary if non-resident. Travelling expenses are payable as stated in the conditions of appointment.
Application forms and conditions of appointment may be obtained from THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2, or from the Office of the High Commissioner for New Zealand, 415, Strand, London, W.C.2. Applications, stating age, qualifications, and experience, together with copies of testimonials, and health and radiological certificates, will be received by the undersigned until 10 A.M. on Monday, 21st November, 1955.
W. A. WILLIAMSON, Secretary, Otago Hospital Board.
P.O. Box 946, Dunedin, New Zealand.

Public Appointments

DURHAM. COUNTY COUNCIL OF DURHAM. Applications are invited from registered medical practitioners (Men and Women) for appointment as SCHOOL MEDICAL OFFICER to act as Dental Anæsthetist in the School Health Service. Applicants must have had at least 3 years experience in the practice of their profession. Salary scale £975–£50–£1375 p.a.
Conditions of appointment and forms of application may be obtained from the undersigned, to whom completed application forms must be returned not later than 10th October, 1955.
G. H. METCALFE, Director of Education.
Shire Hall, Durham, 12th September, 1955.

BAHRAIN, PERSIAN GULF. GOVERNMENT OF BAHRAIN MEDICAL DEPARTMENT invites applications from British Male Doctors for the post of MEDICAL OFFICER. Age 28–35. Minimum salary from age 28 is £1494, rising £45 annually, no allowances. Non-contributory gratuity on retirement. Private practice among Europeans only. No income-tax. Free quarters with hard furniture and car. Agreement for 2 years, renewable, with 5 months home leave on full pay and free air passages for Doctor and wife.
Applications should be addressed to the Chief Medical Officer, Bahrain Government Hospital, Bahrain, Persian Gulf, accompanied by 3 testimonials and a photograph.

GOVERNMENT OF JAMAICA. 2 Assistant Bacteriologists required in Jamaica to carry out and supervise bacteriological procedures in the Bacteriological Laboratory or elsewhere in the Government Medical Service, to undertake forensic investigations if required, to assist in training technicians, medical officers, and medical students of the University College, and to perform such other duties as the Director of Medical Services may direct. Appointments on short-term contract for 1 tour of 3 years in the first instance with gratuity on satisfactory completion of service. Salary would be at the rate of £1750 a year with the right to accept fees for consulting practice or at the rate of £2000 a year without this right. Gratuity would be payable at the rate of £37 10s. for each completed 3 months of service. Free return passages provided for officer, wife and children not exceeding 5 persons in all. Income-tax at local rates. Local leave permissible and home leave on full pay is granted after tour. Climate is healthy for Europeans. Educational facilities are available. Candidates must possess medical qualifications registrable in the United Kingdom. For 1 post a Diploma in Bacteriology or a Diploma in Public Health with experience in bacteriology is required ; and for the other training in pathology and a knowledge of bacteriology.
Application forms from Director of Recruitment, Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. BCD. 117/32/08).

SMETHWICK. COUNTY BOROUGH OF SMETHWICK. Applications are invited from registered medical practitioners for the post of DEPUTY MEDICAL OFFICER OF HEALTH AND DEPUTY SCHOOL MEDICAL OFFICER. The duties will consist mainly of work in connection with maternity and child welfare and school medical inspection, but the successful candidate will be required to undertake other public health work as the Medical Officer of Health may direct, including especially the ascertainment and supervision of handicapped persons. The possession of the Diploma in Public Health or Child Health will be required and preference will be given to candidates who are approved by the Ministry of Education for the purpose of the ascertainment of educationally subnormal children. The salary will be at the rate of £1291 13s. 4d. p.a., rising by 5 annual increments of £51 10s. 0d. to £1549 3s. 4d. p.a. The post is superannuable and the successful candidate will be required to pass a medical examination. The appointment will be subject to 2 months notice on either side.
Applications stating age, qualifications and experience, and giving the names of 2 persons to whom reference may be made, should be addressed to the Medical Officer of Health, Hales-lane, Smethwick, by 14th October, 1955.
E. L. TWYCROSS, Town Clerk.

HER MAJESTY'S OVERSEA CIVIL SERVICE. Nigerian FEDERAL GOVERNMENT SERVICE. An ANÆSTHETIST is required in Lagos to administer anæsthetics in Government Hospitals, to instruct junior medical officers and to perform such other duties as may be assigned to him by the Chief Medical Adviser to the Federal Government of Nigeria. Candidates must possess the Diploma in Anæsthetics (if obtained prior to November, 1953) or Fellowship of the Faculty of Anæsthetists in addition to possessing medical qualifications registrable in the United Kingdom. The selected candidate will be appointed a Special Grade Medical Officer. Appointments may be made as follows :—
(*a*) on 3 years probation for permanent and pensionable employment with retiring age of between 45 and 55. Pensions (which are non-contributory) are at the rate of 1/600th of final pensionable emoluments for each completed month of reckonable service.
(*b*) from the National Health Service. Candidates may leave the National Health Service but retain their superannuation rights up to 6 years and receive a gratuity (taxable) of 20% of the aggregate of their salary. Salaries, including pensionable expatriation pay for officers appointed under (*a*) or (*b*), range from £1170 to £1850 p.a., or
(*c*) on short-term contract (2 tours each of 18–24 months duration) with inclusive salary of from £1386 p.a., rising to £2150 p.a. ; on completion of contract a gratuity (taxable) is paid at the rate of £37 10s. for each completed period of 3 months service (including leave).
Starting salary depends on experience and war service. A revision of salaries has been undertaken in Nigeria and the candidate selected would benefit from any increase granted. Officers appointed under (*a*) or (*b*) will be considered after experience abroad for promotion to Specialist with a salary of £2025 a year which includes pensionable expatriation pay.
Quarters are provided at low rents. Free passages in both directions are provided for officer and his wife. Payment of the cost actually incurred on 1 outward and 1 homeward passage for each of 2 children under age of 18, subject to maximum of £75 in respect of the return journey for each child, is also granted. Alternatively, an allowance at the rate of £75 a year for each of 2 children under the age of 18, is payable pro rata during an officer's tour of residential service (excluding leave) provided that the cost of children's passages is not paid from Nigerian Government funds and that the children are maintained outside Nigeria during the period for which the allowance is claimed. Income-tax at low local rates. Local leave is permissible and generous home leave is granted after each tour.
Application forms from Director of Recruitment, Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. BCD. 117/14/045).

HER MAJESTY'S OVERSEA CIVIL SERVICE. Medical BRANCH—HONG KONG. PATHOLOGIST required in Medical Department, Hong Kong, to undertake vaccine production, public health laboratory work, clinical pathology and post-mortem work. Candidates must be under 35 years of age, possess a medical qualification registrable in the United Kingdom and have had 3 years professional experience, preferably in pathology. Appointment on 2 years probation for permanent and pensionable employment. Total emoluments of the post are made up as follows.

1. Salary scale from $1395 to $2800 a month, i.e., £1046 5s.–£2100 a year (1 Hong Kong dollar equals 1s. 3d.); starting salary depending upon qualifications and experience.

2. Expatriation pay, half of which counts as pensionable, varying according to salary from $280 a month (£210 a year) to $375 a month (£281 5s. a year), and

3. Temporary variable non-pensionable cost-of-living allowance varying according to salary and family circumstances. At present a single officer on the minimum would get approximately £41 a year and a married officer on his maximum salary would get £630 a year.

Free passages in both directions provided for officer, wife, and up to 3 children under the age of 18. Quarters, when available, are provided at rental of not more than 1/7th of basic salary. Income-tax at local rates. Annual local leave is permissible and generous home leave is granted after each tour of 4 years. Climate is favourable for Europeans—a cool dry winter with well-marked changes of seasons. Education facilities are available. Pension is 1/600th of final pensionable emoluments for each completed month of reckonable service. Officers permanently employed are required to contribute to a Widows and Orphans Pension Scheme.

Application forms from Director of Recruitment, Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. BCD. 117/51/025).

GREENOCK. CORPORATION OF GREENOCK. Applications are invited from registered medical practitioners possessing the Diploma in Public Health or equivalent qualification for the appointment of DEPUTE MEDICAL OFFICER OF HEALTH AND DEPUTE PORT MEDICAL OFFICER for the Burgh. The appointment is whole-time, terminable on 3 months notice and is subject to the provisions of the Local Government Superannuation (Scotland) Acts. Salary scale £1153 6s. 8d. rising by annual increments of £51 10s. to £1410 16s. 8d. p.a. with placing according to experience. If desired, housing accommodation will be offered to the successful applicant. Applicants should have had clinical and administrative experience in public health work.

Applications, stating age, present and previous appointments, qualifications and other relevant information, together with the names and addresses of 3 referees, should be lodged with th undersigned not later than Saturday, 15th October, 1955.

JOHN LIDDELL, Town Clerk.

Municipal Buildings, Greenock, 19th September, 1955.

NOTTINGHAM. CITY OF NOTTINGHAM. Health SERVICES. SENIOR ASSISTANT MEDICAL OFFICER. Applications are invited from Male registered medical practitioners holding a Diploma in Public Health for this appointment. The salary will be within the scale £1075–£50–£1475 a year, the commencing salary to be fixed in accordance with experience. In addition to special duties in connection with health education the successful candidate will be given wide opportunities for administrative and practical experience in all services of the Health Department. The appointment is superannuable and subject to the usual conditions.

Forms of application may be obtained from the undersigned, to whom they must be returned, together with the names of 2 referees, by not later than 8th October, 1955.

T. J. OWEN, Town Clerk.

Guildhall, Nottingham, September, 1955.

SUDAN GOVERNMENT. The Ministry of Health, Sudan Government, invites applications for the following posts :—

MEDICAL PATHOLOGIST. Candidates must have Honours Degree and must be fully literate in either Arabic or English. Age limits 22–45 years. Salary range from £E1750 to £E2330 p.a. (for Junior Specialist) or a fixed salary of £E2500 p.a. (for Specialist).

BACTERIOLOGIST. Candidates should have specialist experience in bacteriology, and in a reputed Institute. Salary range from £E1750 to £E2330 p.a. (for Junior Specialist) or a fixed salary of £E2500 p.a. (for Specialist).

Male SPECIALIST, PHYSICIANS, SURGEONS AND GYNÆCOLOGIST. Candidates must possess adequate professional qualifications for the type of post, viz., M.R.C.P., F.R.C.S., or M.R.C.O.G., or internationally recognised equivalents. Age should be 28–43. Salary range £E1750–£E2330 p.a. (for Junior Specialists) or fixed rate of £E2500 p.a. (for Specialists).

Candidates for these posts may apply for secondment from the National Health Service for a period of up to 3 years under the terms of circular letter No. RHB/(52)106BG(52)101 of 30th September, 1952.

All the above appointments will be on short-term contracts for a period of up to 5 years and starting rates of pay will be determined according to age, experience and qualifications. In certain cases a cost-of-living allowance is also payable at present. A bonus of 1 months salary for each year of service, subject to a maximum of 6 months pay is payable on satisfactory completion of the contract. Outfit allowance of £E50 is payable when the contract is signed. Free passage on appointment. Annual leave after the first tour.

Further particulars and application form will be sent on application to Dr. E. P. PRATT, Consultant Physician to the Sudan Government, 93, Harley-street, London, W.1. Please quote the appointment concerned and give name and address in block letters.

NATIONAL COAL BOARD. Applications are invited from registered medical practitioners for a full-time appointment as MEDICAL OFFICER to the West Ayr Area of the Scottish Division. Duties will embrace the usual functions of Industrial Medical Officers. Candidates should have had experience in general practice and/or in the field of preventive and industrial medicine. Knowledge of the Coalmining Industry will be an advantage. Salary will be within the range of £1400–£2150 p.a. according to qualifications, age and experience. Membership of the Board's Superannuation Scheme, subject to medical examination, is obligatory.

Applications, giving full particulars of age, qualifications, experience (in chronological order), present appointment and salary, together with 3 references, should be sent to Establishments Officer, National Coal Board, 1, Eglinton-crescent, Edinburgh, 12, within 7 days. Original testimonials should not be sent.

WEST BROMWICH. COUNTY BOROUGH OF WEST BROMWICH. Applications are invited from registered medical practitioners for the appointment of DEPUTY MEDICAL OFFICER OF HEALTH AND DEPUTY PRINCIPAL SCHOOL MEDICAL OFFICER at a salary in accordance with the scale £1222 rising by 5 increments of £51 10s. to £1479 10s. The Council have adopted the conditions of service agreed by the Medical Council of the Whitley Councils for the Health Services.

Full particulars and form of application may be obtained from the undersigned. Closing date for applications 1st October, 1955.

Town Hall, West Bromwich. J. M. DAY, Town Clerk.

General Practice

For an Executive Council post (England and Wales) apply on form E.C.16A *obtainable from the council. Mark envelope "Vacancy."*

EYE, EAST SUFFOLK. Applications invited for Vacancy due to resignation. Urban and rural practice, list (including 38 patients in Norfolk) at present 1811, of which approximately 850 are dispensing cases. Intermediate area. Residence and surgery available for purchase. Apply on Form E.C.16A not later than 6th October, 1955, to—

A. P. LUCAS, Clerk, East Suffolk County Executive Council.
32, Silent-street, Ipswich.

Miscellaneous

To non-professional posts the Notification of Vacancies Order 1952 applies

GENERAL AND OTHER MEDICAL PRACTITIONERS INTERESTED IN DREAM RESEARCH in relation to somatic disorder apply to : B.R.U.P. UNIT (started 1947), ALICE E. BUCK, M.D.(PSYCH. MED.), CH.B., M.R.C.S., L.R.C.P., 18, Harley-street, London, W.1.

The Ciba Foundation, London, founded for the promotion of international coöperation in medical research (Trustees : Lord Adrian, Lord Beveridge, and Mr. Raymond Needham, Q.C.), seeks young man as Assistant to Director, from January, 1956. A responsible post in administration in unusually pleasant environment. Candidates should hold a British University Degree, preferably in Science, should have facility in correspondence, and be methodical, dependable, and sociable. Knowledge of foreign languages desirable. Salary according to age and experience.—Send full particulars of education, subsequent career, and other interests to the Solicitors to the Foundation, Messrs. SWEPSTONE, WALSH & SON, 3, Pump-court, Temple, London, E.C.4.

Kuwait Oil Company invites applications for the post of Clinical Pathologist to the Company Hospital in Kuwait. The post affords excellent opportunities for specialised work, and there is good clinical material available. Applicants should have a good background of general experience in the Pathology Department of a Hospital. Previous overseas experience would be an advantage. Age up to 40. Salary will depend upon experience, but total emoluments will not be less than £2500 p.a. In addition there is a contributory pension scheme. Married accommodation available on appointment.—Write giving brief details, quoting K.1903, to Box F/54, c/o 191, Gresham House, E.C.2.

Biochemist. A vacancy for a Biochemist with experience in the chemistry of proteins exists in a laboratory engaged in work on human plasma.—Write, stating age, qualifications, and experience, to the Secretary, LISTER INSTITUTE OF PREVENTIVE MEDICINE, Elstree, Herts.

Experienced Medical Secretary required in medico-legal practice, London, W.1.—Address, No. 164, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

"Pregnancy Diagnosis by the Xenopus Method," 24-hour service. Send specimen of urine and £1 1s. fee. Hæmatology, Biochemistry, Flame Photometry.—WELBECK BIOLOGICAL LABORATORIES, 26, Park-crescent, Portland-place, W.1 (MUSeum 5386–7).

Applicants for posts requiring testimonials copied or duplicated should communicate with MANTON SECRETARIAL SERVICE LTD., 98, Victoria-street, S.W.1 (Phone : VICtoria 0141), who are specialists in this kind of work.

The British Journal of Medical Hypnotism. Quarterly, £1 1s. p.a.—Orders to the publishers, 4, Victoria-terrace, Hove, 3, Sussex.

Austin. A.30, A.40, A.50, and A.90 Models. Limited number of orders now acceptable from proven essential users for delivery ahead.—Demonstrations, brochures, easy terms, application forms on request from H. A. SAUNDERS LIMITED, Austin House, 140–144, Golders Green-road, Golders Green, London, N.W.11.

Boyle's Machine (D model) in good condition. £20 or exchange good D.B. hammerless shotgun.—CARPENTER (WHI. 6427).

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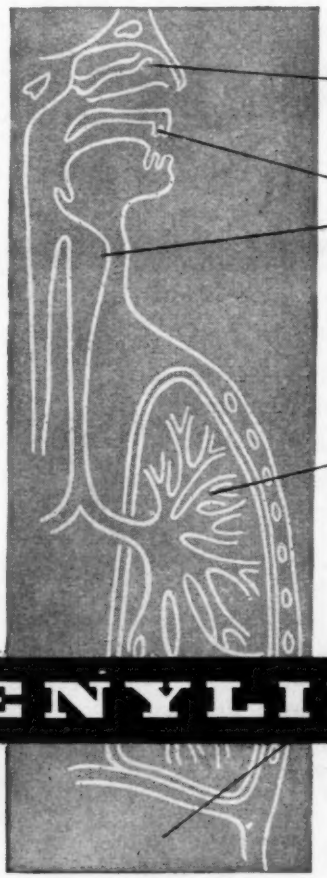

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Benylin* Expectorant offers prompt relief from the irritation of bronchitis and other respiratory complaints.

Unbeneficial cough is rendered more productive and becomes less frequent and severe. Nasal stuffiness, sneezing, and bronchial congestion are quickly alleviated.

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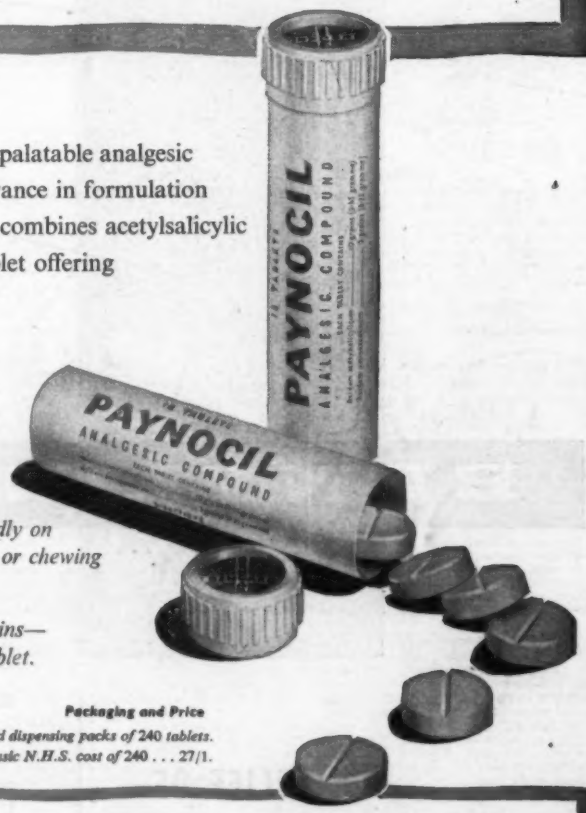

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Because of its non-irritant properties Paynocil is ideal in the prolonged aspirin therapy necessary in rheumatoid arthritis.

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